ANS GEO

FOCUSED GEOPHYSICAL INVESTIGATION AND KARST EVALUATION REPORT

Candela RENEWABLES

Summer Shade Solar Project – Phases I & II

Metcalfe and Monroe Counties, Kentucky

January 10, 2024

Table of Contents

1 Executive Summary 1
1.1 Key Findings 1
1.2 Conclusions and Recommendations 2
2 Introduction 3
3 Background Geology 4
3.1 Surficial & Bedrock Geology 4
3.2 Publicly Available Well Log Data Review 5
3.3 Documented Karst Features 6
4 Field Investigation 9
5 Geophysical Investigation Methods 12
5.1 Electrical Resistivity Imaging (ERI) 12
5.1.1 Theory 12
5.1.2 Methods 13
5.1.3 Data Collection and Data Processing 13
5.2 Multi-channel Analysis of Surface Waves (MASW) 13
6 Geophysical Analysis 14
6.1 Geophysical and Geological Analysis 14
7 Risk Evaluation and Conclusions 24
7.1 Offset and Buffers 25
7.2 Karst Management and Mitigation During Design and Construction 26
7.3 Presence of Variable Depths to Bedrock 26
7.4 Stormwater and Grading 27
8 Discussion and Limitations 27
9 References 28

Figures

Figure 1: Project Vicinity Map 4
Figure 2: Summer Shade Site Map 4
Figure 3: Geologic Map of Project Area 5
Figure 4: Documented Open Throat Example 6
Figure 5: Karst Risk Buffer Map 26

Tables

Table 1: Summary of Publicly Available Well Log Data 5
Table 2: Documented Potential Karst-Related Features - Phase I....7
Table 3: Documented Potential Karst-Related Features - Phase II....9
Table 4: Geophysical Survey Parameters - Phase I 10
Table 5: Geophysical Survey Parameters - Phase II 11
Table 6: Geophysical Survey Observations and Notes - Phase I 15
Table 7: Geophysical Survey Observations and Notes - Phase II 20

Appendices

Attachment A-1 - Observed Karst Feature Photo Log – Phase I
Attachment A-2 - Observed Karst Feature Photo Log – Phase II
Attachment B - Location Plans
Attachment C-1 - Electrical Resistivity Imaging (ERI) Profiles – Phase I
Attachment C-1 - Electrical Resistivity Imaging (ERI) Profiles – Phase II
Attachment D-1 - Multichannel Analysis of Surface Waves (MASW) Profiles – Phase I
Attachment D-2 - Multichannel Analysis of Surface Waves (MASW) Profiles – Phase II
Attachment E - Geological Mapping
Attachment F - Karst Risk Map
Attachment G - Karst Management & Mitigation Plan

1 Executive Summary

ANS Geo was retained by Candela Renewables to complete a focused geophysical investigation (Phase I) to preliminarily evaluate the presence of karst conditions at the Summer Shade Solar Project (Summer Shade) site located in Metcalfe and Monroe Counties, Kentucky in June 2024. ANS Geo was also retained by Candela Renewables in September 2024 to complete an additional focused geophysical investigation (Phase II) to evaluate the presence of karst conditions within updated constraint areas within the project site. Results of both geophysical investigations (Phase I & II) are detailed within this report.

Based on our review of available information, we identified that the project site is mapped by the United States Geological Survey (USGS) as being underlain by the Ste. Genevieve and St. Louis Limestones, Salem, Warsaw, and Harrodsburg Limestones, Renfro and Muldraugh Members of the Borden Formation, and Fort Payne Formation. Layers of fine-grained soil are understood to exist over these limestones, to depths of 8 to 35 feet below ground surface (BGS), based on well log data from within and near the project site. The USGS identifies the Ste. Genevieve and St. Louis Limestones and the Salem, Warsaw, and Harrodsburg Limestones as karst- and subsidence-prone formations. Subsidence is a potential geologic hazard in areas where karst terrain occurs. Ground subsidence is the local downward movement of surface material with little or no horizontal movement. In karst terrain, carbonate-based bedrock (e.g., limestone and dolomite) is dissolved and eroded by water, and karst features form such as open cracks, subsurface channels, disappearing streams, voids, caves, and sinkholes.

To evaluate the presence or absence of karst anomalies at the project site, ANS Geo completed an initial, focused geophysical investigation program (Phase I) consisting of Electrical Resistivity Imaging (ERI) and Multi-channel Analysis of Surface Waves (MASW) surveys to assess the presence and characterize the type of karst features at select locations across the site. To further evaluate the presence or absence of karst anomalies within updated constraint areas at the project site, ANS Geo completed another focused geophysical investigation program (Phase II) also consisting of ERI and MASW surveys. Both geophysical investigations were not exhaustive evaluations of the entire site, but instead, were intended to gain a general understanding of the subsurface conditions and the impact of karst on the design, siting, and construction of the project. ANS Geo performed a “walk-through” of areas of potential karst that were identified from publicly available information during the Phase I investigation. During the Phase I investigation, ANS Geo performed geophysical surveys between June 7 and June 14, 2024, primarily near potential karst features observed at the ground surface. The results of thirty (30) ERI surveys and eight (8) MASW surveys that were completed during the Phase I investigation, which were completed at locations dispersed throughout the solar project boundaries, are presented in this Report. During the Phase II investigation, ANS Geo performed geophysical surveys between September 17 and September 24, 2024, primarily within Candela’s updated constraint areas. The results of thirty-six (36) ERI surveys and three (3) MASW surveys that were completed during our Phase II investigation are presented in this Report.

Multiple geophysical surveys that were performed for the solar project indicated the presence of potential karst features at the project site. The results of the surveys suggest the thickness of fine-grained soils and weathered rock generally ranges from very close to the surface (within a foot or two) to over 50 feet BGS, with limestone bedrock underlying the overburden. Resistivity values generally range from less than 300 Ohm-meters in the upper 0 to 50 feet BGS to tens of thousands Ohm-meters (more than 50,000 Ohm-meters) where air-filled voids may be interpreted. Very high resistivity values may also be indicative of more massive limestone with minor void space. The ERI and MASW profiles that were produced during our Phase I & Phase II investigations are provided as **Attachment C** and **Attachment D**, respectively.

1.1 Key Findings

The geophysical investigations and site “walk-throughs” generally indicate a moderate to high likelihood of karst-related features existing in the approximate northern and southwestern sections of the project site, based on the findings from the discrete locations investigated. Karst environments are dynamic and can continue to evolve over time. Areas currently identified as having karst features may experience additional development or changes, and areas not previously investigated or mapped as karst-prone may reveal features in the future. As such, the potential for karst development should be factored into the project's design, construction, and long-term operations and maintenance plans to address potential subsidence and associated effects.

Should design and development proceed, implementing appropriate buffers around identified karst features is recommended. Additionally, incorporating a terrain-following racking system capable of accommodating differential ground movement, such as Nevados or Nextracker XTR, should be considered to enhance structural resilience. Prior to or at the start of construction, supplemental investigations and site "walk-throughs" in areas not previously evaluated are encouraged to identify any actively developing or visible karst features that may require remediation or adjustments to the site plan.

On-going monitoring and maintenance throughout the project's lifespan will also be essential to manage potential impacts from karst activity, such as sinkholes, ground movement, or collapses, which may affect the integrity of racking systems, inverter pads, and other structures.

If karst features are encountered during development, their impact can be mitigated by remediating near-surface sinkholes or by avoiding development in areas where significant features are identified. Since the geophysical investigations were performed at specific, discrete locations, it is possible that areas not investigated may also have karst-related concerns or a higher potential for subsidence than inferred from the existing data. To address this, additional geophysical and/or geotechnical investigations are recommended for areas designated for heavily-loaded foundations, poles, slabs, or other critical structures.

Furthermore, karst features identified during the geophysical surveys can be confirmed and better understood through percussion drilling. If broader site-wide coverage is desired, additional Electrical Resistivity Imaging or Terrain Conductivity Mapping could also be considered. The Terrain Conductivity Mapping method can provide a grid-like assessment of the upper 30 feet below grade to detect potential karstic formations across the site.

1.2 Conclusions and Recommendations

ANS Geo notes there are indications of active, ongoing karst development in the approximate northern and southwestern sections of the project area, based on findings from the site "walk-through" and geophysical investigations. While these areas demonstrate a higher potential for karst-related challenges, additional karst features may exist in areas not previously evaluated, as the investigations were completed at specific, discrete locations. Karst is a dynamic environment, and changes are expected over time.

Should design and development proceed, additional investigations are recommended to further evaluate the observed and interpreted karst features across the project site. The implementation of appropriate buffers around potential karst features is also encouraged. This is discussed further in **Section 7** of our Report and in the Karst Management and Mitigation Plan included as **Appendix G**. A Karst Risk Map with recommended buffers has been provided as **Attachment F** and is shown in **Figure 5** within **Section 7.1** of the Report.

Even with appropriate buffers in place, ongoing management and mitigation will be required to address the impacts of future karst activity. This may include, but is not limited to:

- Remediation of karst features, which could involve methods such as compaction grouting, jet grouting, or over-excavation and replacement with an inverted filter or other materials;
- Utilizing deep foundations for single-point structures (e.g., inverters, combiner boxes, and other pad-mounted features) to bypass karst-affected zones; and
- Monitoring and remediation activities, which may include underpinning, shimming, re-construction, or replacement as necessary.

Prior to construction, additional focused geophysical and/or geotechnical investigations in areas not previously evaluated are recommended to assess subsurface conditions, particularly in locations where heavily loaded foundations, poles, slabs, or other structures are planned. Supplemental site “walk-throughs” can also help identify any actively developing or newly visible karst features that may require remediation or additional planning considerations.

To provide broader site coverage, Terrain Conductivity Mapping could be considered as a method to scan the full project site in a grid-like pattern. This technique allows for assessment of the approximate upper 30 feet below grade for potential karstic formations.

While the northern and southwestern sections of the site show a higher potential for karst-related challenges, addressing the recommendations outlined above will help mitigate potential risks across the project area and support the successful development and long-term operation of the Summer Shade Solar Project.

2 Introduction

ANS Geo was retained by Candela Renewables to complete an initial geophysical investigation (Phase I) to evaluate the potential presence of karst at the Summer Shade Solar Project (Summer Shade) site in Metcalfe and Monroe Counties, Kentucky. ANS Geo was retained by Candela Renewables to complete an additional geophysical investigation (Phase II) to evaluate the potential presence/absence of karst within updated constraint areas provided by Candela (Phase II).

Initially, ANS Geo reviewed various publicly available resources and project information you provided. These resources are summarized below:

- “Summer Shade Project Boundary + all unsurveyed parcels purple, red, orange 20240213.kmz” – KMZ file with project layout information dated February 13, 2024
- “Summer Shade – Phase II – Constraint and Candela Areas Only (R1 – 20SEP2024).kmz”
- “SummerShadeSolar_Scenario3_Fixedtilt_atCapacity” and “SummerShadeSolar_Scenario3_TrackerRowsToKeep” – KMZ files showing the proposed PV Module layout as part of the “KiloNewton Initial Findings” package that was provided to us by Candela on April 25, 2024
- “20240311 Stantec environmental delineations.kmz” – KMZ file with wetland delineations provided by Candela on May 10, 2024
- “Ky Water Resources Polygons Sinkholes” – GIS map dataset, dated March 7, 2023, downloaded from opengisdata.ky.gov
- “USGS 13 arc-second n37w086 1 x 1 degree” – Digital Elevation Model (DEM) data, dated December 12, 2021
- Google Earth aerial satellite imagery.

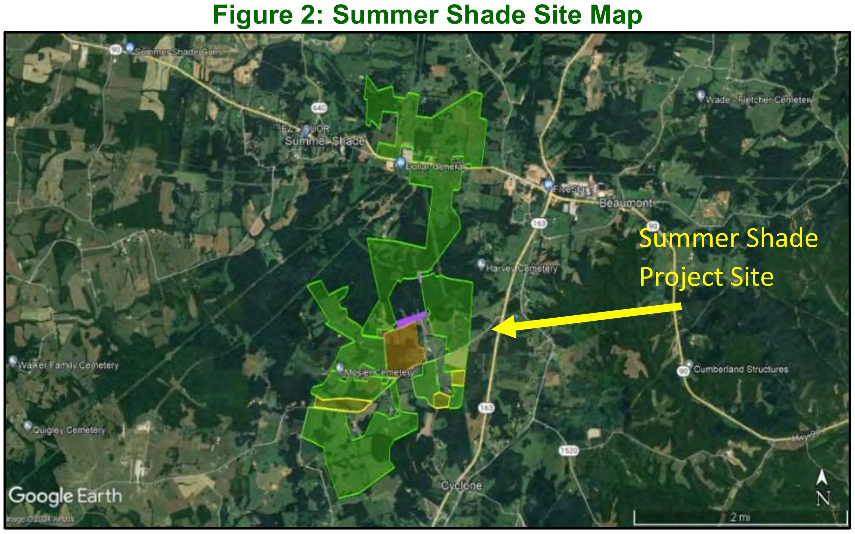
Areas where mapped sinkhole polygons overlapped with PV module layout areas were selected to be included in the initial geophysical investigation (Phase I), unless mapped features were located within forested areas. Additional geophysical surveys (Phase II) were positioned within updated constraint areas. The DEM data were utilized to produce a hill shade analysis of the topography of the site. Using this hill shade analysis, areas were selected where features resembling areas of subsidence or sinkholes were identified. Google Earth aerial imagery was also reviewed, including the most recent imagery and historical imagery dating back to 1997, to identify any noticeable changes in characteristics of the ground surface due to potential karst formations.

At the project site, ANS Geo looked for evidence of karst features during a “walk-throughs” of the investigation areas selected during the desktop review. Forty-two (42) karst features were observed at the ground surface during our “walk-through” during the initial investigation (Phase I). Geophysical survey lines were positioned across many locations of observed karst features. ANS Geo proposed an additional geophysical investigation program consisting of Electrical Resistivity Imaging (ERI) and Multi-channel

Analysis of Surface Waves (MASW) surveys to characterize the type, depth, and extent of karst features at select representative locations across the site. Five (5) additional karst features were observed at the ground surface during our additional investigation (Phase II). However, during our additional investigation (Phase II), survey lines were primarily positioned over updated constraint areas provided by Candela to identify the potential presence of karst features within those areas. The geophysical investigation was intended to gain a general understanding of the subsurface conditions and understand the potential impact that karst conditions may or may not contribute to the design, siting, and construction of the proposed solar facility. **Figure 1** (below) depicts a project vicinity map, and **Figure 2** (below) depicts a site map of the project area.

Figure 1: Project Vicinity Map

Figure 2: Summer Shade Site Map

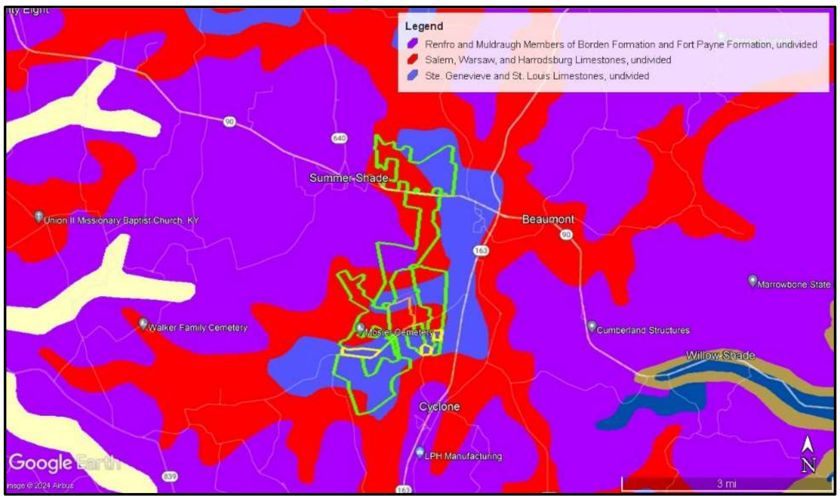


3 Background Geology

3.1 Surficial & Bedrock Geology

ANS Geo conducted a brief desktop review of surficial and bedrock geology maps and reports made available by the USGS and the Kentucky Geological Survey. These resources indicate the project area is mapped within the Ste. Genevieve and St. Louis Limestones and the Salem, Warsaw, and Harrodsburg Limestones and the Renfro and Muldraugh Members of the Borden Formation and the Fort Payne Formation. The Ste. Genevieve and St. Louis Limestones are composed of approximately 90% limestone, 8% dolomite, and incidental chert beds and sandstone. The Salem, Warsaw, and Harrodsburg Limestones are collectively composed of approximately 70% limestone, 10% dolomite, and 20% calcareous interbedded shale, siltstone, and sandstone. The Renfro and Muldraugh Members are the uppermost units of the Borden Formation, and the Fort Payne Formation overlies the Borden Formation along the delta front and the Chattanooga Shale. The USGS identifies the Ste. Genevieve and St. Louis Limestones and the Salem, Warsaw, and Harrodsburg Limestones as karst-prone formations. Mapped locations of these bedrock units are shown in **Figure 3**. Geological mapping of the region is provided as **Attachment E**.

Figure 3: Geologic Map of Project Area



3.2 Publicly Available Well Log Data Review

ANS Geo reviewed publicly available well log data provided by the Kentucky Geological Survey (KGS). Historical well logs from locations on and near the Summer Shade project site indicate the top of limestone bedrock exists between approximately 8 and 35 feet BGS with fine-grained soil overburden. Groundwater likely exists between 50 and 120 feet BGS at the project site. The locations of these well logs and the lithology associated with them are summarized in **Table 1**. A location plan showing these well locations relative to the Summer Shade project site is provided as **Attachment B**.

Table 1: Summary of Publicly Available Well Log Data

KGS Well Log ID	Lithologic Log	Location/Coordinates	Distance From Summer Shade Project Site
00002628	0 – 35 ft BGS: Soil 35 – 50 ft BGS: Gray Limestone **50 ft BGS: Groundwater observed** 50 – 70 ft BGS: Gray and Brown Limestone **70 ft BGS: Groundwater observed** 70 – 88 ft BGS: Gray Limestone	36.858333°, -85.693056°	On-site
00006741	0 – 8 ft BGS: Soil 8 – 60 ft BGS: Gray Limestone **60 ft BGS: Groundwater observed** 60 – 90 ft BGS: Gray Limestone	36.852778°, -85.695000°	On-site

KGS Well Log ID	Lithologic Log	Location/Coordinates	Distance From Summer Shade Project Site
00000285	0 – 35 ft BGS: Soil 35 – 118 ft BGS: Warsaw Limestone **118 ft BGS: Groundwater observed** 118 – 165 ft BGS: Gray Limestone	36.867282°, -85.683626°	~0.02 mile from central-eastern border of the project site
00002637	0 – 25 ft BGS: Soil 25 – 100 ft BGS: Black Limestone 100 – 120 ft BGS: Gray Limestone **100 ft BGS: Groundwater observed**	36.818056°, -85.743889°	~2.75 miles from southwest border of the project site
00000956	0 – 24 ft BGS: Top Soil & Clay 24 – 28 ft BGS: Gray Limestone 28 – 31 ft BGS: Mud 31 – 102 ft BGS: Gray Limestone **65 ft BGS: Water Stream observed**	37.013056°, -85.748333°	~8.9 miles from northwest border of the project site
00000937	0 – 33 ft BGS: Top Soil & Clay 33 – 74 ft BGS: Gray Limestone 74 – 77 ft BGS: Mud 77 – 102 ft BGS: Gray Limestone **87 ft BGS: Water Stream observed**	37.073333°, -85.730833°	~12.7 miles from northwestern border of the project site
00000370	0 – 18 ft BGS: Red Clay 18 – 25 ft BGS: Gray Limestone 25 – 80 ft BGS: Hard Gray Limestone 80 – 200 ft BGS: Gray and Dark Limestone **150 ft BGS: Groundwater observed**	37.068056°, -85.622500°	~12.9 miles from northern border of the project site

3.3 Documented Karst Features

ANS Geo completed a site "walk-through" during our initial investigation (Phase I) to identify and confirm potential karst features on-site; ANS Geo documented forty-two (42) potential karst-related features on-site, including surface depressions, openthroat features, sinkholes, and other potential karst-related features. During the additional investigation (Phase II), ANS Geo documented five (5) additional karst-related features, including surface depressions and a sinkhole. One of the open throat features documented on-site is shown in **Figure 4**. The documented features from our Phase I investigation are summarized in **Table 2**, and the documented features from our Phase II investigation are summarized in **Table 3**. Photo logs of potential karst features documented during our Phase I and Phase II investigations have been provided as **Attachment A-1** and **Attachment A-2**, respectively. The locations of the potential karst features are shown in the Location Plans in **Attachment B**.

Figure 4: Documented Open Throat Example

Table 2: Documented Potential Karst-Related Features – Phase I

Feature ID	Type of Feature	Size (Length x Width x Depth feet)	Notes
D-01	Depression	~330'x250'x20'	Dry, brown grass at bottom of depression.
D-02	Depression	~145'x85'x7'	Dry, brown grass at bottom of depression.
D-03	Depression	9'x8'x3'	Different vegetation inside depression than in the area surrounding it.
D-04	Depression	~300'x300'x20'	Large bowl-like depression. Different vegetation inside depression than in the area surrounding it.
D-05	Depression	4'x4'x1.5'	-
D-06	Depression	~33'x30'x4'	Different vegetation inside depression than in the area surrounding it.
D-07	Depression	3'x'3'x1'	-
D-08	Depression	5'x5'x0.5'	-
D-09	Depression	3'x3'x0.5'	-
D-10	Depression	3'x3'x0.5'	-
D-11	Depression	10'x15'x1'	Different vegetation inside the depression than in the area surrounding it.
D-12	Depression	~150'x80'x10'	-
D-13	Depression	19'x28'x4'	Trees inside the depression.
D-14	Depression	~80'x80'x20'	Variety of trees and tall vegetation inside the depression.
D-15	Depression	~20'x20'x2'	Tall, thick vegetation inside the depression.
D-16	Depression	9'x9'x2'	No vegetation inside the depression.
D-17	Depression	26'x26'x2.5'	Grass at the base of the depression. Animal tracks inside depression. Water retention inside depression.
D-18	Depression	30'x30'x8'	Trees, other tall vegetation, and exposed rock inside the depression.
D-19	Depression	~90'x112'x4.5'	Different grass inside the depression. Water retention inside the depression.
D-20	Depression	98'x56'x2'	Tall vegetation inside the depression.
D-21	Depression	~140'x78'x15'	Dry grass at the base of the depression.
D-22	Depression	92'x36'x5'	Tires inside the depression.
D-23	Depression	182'x123'x8'	Trees inside the depression.
D-24	Depression	109'x132'x7'	-
S-01	Sinkhole	15'x11'x3'	Different vegetation around the sinkhole than in the surrounding area.
S-02	Sinkhole	5'x5'x4'	Different vegetation around the sinkhole than in the surrounding area.
S-03	Sinkhole	50'x50'x6'	Foreign objects and rocks inside sinkhole. Trees and tall vegetation surrounding the sinkhole.
S-04	Sinkhole	45'x40'x10'	Foreign objects and rocks inside sinkhole. Trees and tall vegetation surrounding the sinkhole.
S-05	Sinkhole	6'x6'x>4'	Foreign objects and tall vegetation surrounding the sinkhole.
OT-01	Open Throat	1.5'x1.5'x3'	-

Feature ID	Type of Feature	Size (Length x Width x Depth feet)	Notes
OT-02	Open Throat	10'x8'x>20'	Fence located across the open throat. Open throat extends at an angle beyond 20 feet BGS.
OT-03	Open Throat	4'x4'x10'	Exposed rock inside the open throat.
OT-04	Open Throat	1.5'x1.5'x2'	Foreign objects and exposed rock inside the open throat.
PKF-01	Other Potential Karst Feature	~30'x50'x30'	Foreign objects and rock inside the potential karst feature. Trees and tall vegetation inside the potential karst feature.
PKF-02	Other Potential Karst Feature	14'x6'x2'	Exposed rock inside the potential karst feature. Water retention inside the potential karst feature. The potential karst feature could be a drainage feature.
PKF-03	Other Potential Karst Feature	3'x3'x1'	Exposed rock inside the potential karst feature. Water retention inside the potential karst feature. The potential karst feature could be a drainage feature.
PKF-04	Other Potential Karst Feature	12'x7'x2'	Exposed rock inside the potential karst feature. Water retention inside the potential karst feature. The potential karst feature could be a drainage feature.
PKF-05	Other Potential Karst Feature	27'x22'x5'	Different vegetation inside the potential karst feature than in the area surrounding it.
PKF-06	Other Potential Karst Feature	~60'x40'x>10'	Foreign objects and trees inside the potential karst feature.
PKF-07	Other Potential Karst Feature	15'x12'x4'	Steep slope leading into the potential karst feature. No vegetation inside the potential karst feature. Animal tracks inside the potential karst feature.
PKF-08	Other Potential Karst Feature	40'x12'x12'	Variety of tall vegetation and logs inside and surrounding the potential karst feature.

Table 3: Documented Potential Karst-Related Features – Phase II

Feature ID	Type of Feature	Size (LxWxH)	Notes
PKF-09	Other Potential Karst Feature	40'x30'x6'	Trees and exposed rock inside the potential karst feature.
D-25	Depression	23'x10'x6'	Different vegetation in and around depression than in the area surrounding it.
D-26	Depression	3'x3'x<1'	-
D-27	Depression	5'x5'x<1'	Dryer, darker vegetation in depression than in the area surrounding it.
D-28	Depression	20'x7'x<1'	Dryer, darker vegetation in depression than in the area surrounding it.
S-06	Sinkhole	103'x75'x10'	Trees located in and around sinkhole. Open throat exists at the bottom of the sinkhole, which extends >20' deep.

4 Field Investigation

ANS Geo completed geophysical surveys at the project site between June 7 to June 13, 2024 and September 17 to September 24, 2024 during our Phase I and Phase II investigations, respectively. The ERI method, which was the primary method used for this investigation, utilized a combined Dipole-Dipole and Strong-Gradient array type. The ERI surveys were completed using an array of electrodes positioned in a linear fashion with a consistent electrode spacing. Thirty (30) ERI survey transects were completed during our Phase I investigation, which were generally aligned with karst features documented in **Table 2.** Thirty-six (36) ERI survey transects were completed during our Phase II investigation, which were generally performed over updated constraint areas provided by Candela.

Additionally, ANS Geo completed eight (8) MASW surveys during our Phase I investigation and three (3) MASW surveys during our Phase II investigation using an array of consistently-spaced sensors (geophones) positioned in a linear fashion and centered at the locations shown in **Attachment B**. The MASW surveys were completed on June 14, 2024 and September 24, 2024 during our Phase I and Phase II investigations, respectively. The MASW data were acquired using an active source method consisting of a sledgehammer impacting a metal plate. “Passive” MASW data were also acquired. For detailed discussions on the methodology, please refer to **Section 5**.

ANS Geo has provided Location Plans as **Attachment B** that show the locations of the geophysical survey transects (lines) as they correspond to the proposed solar facility layout that was available at the time of our survey. **Sheets 1** through **30** of **Attachment C-1** include an ERI profile associated with each of the ERI survey lines completed during our Phase I investigation. **Sheets 1** through **36** of **Attachment C-2** include an ERI profile associated with each of the ERI surveys completed during our Phase II investigation. MASW survey results from our Phase I and Phase II investigations are presented as **Attachment D-1** and **Attachment D-2**, respectively.

Table 4 and **Table 5** summarize the geophysical method and ID number, associated attachment sheet number, orientation, distance, number of sensors, and the sensor spacing associated with each ERI and MASW survey line completed during our Phase I and Phase II investigations, respectively.

Table 4: Geophysical Survey Parameters – Phase I

Method-ID	Attachment-Sheet No.	Profile Orientation	Survey Distance (ft)	Number of Electrodes/ Geophones	Electrode/ Geophone Spacing (ft)
ERI-01	C-1 – 1	East to West	275	56	5
ERI-02	C-1 – 2	Northwest to Southeast	440	56	8
ERI-03	C-1 – 3	West to East	385	56	7
ERI-04	C-1 – 4	Southeast to Northwest	440	56	8
ERI-05	C-1 – 5	Southeast to Northwest	270	28	10
ERI-06	C-1 – 6	South to North	270	28	10
ERI-07	C-1 – 7	North to South	440	56	8
ERI-08	C-1 – 8	West to East	270	28	10
ERI-09	C-1 – 9	Northwest to Southeast	275	56	5
ERI-10	C-1 – 10	Northwest to Southeast	270	28	10
ERI-11	C-1 – 11	North to South	440	56	8
ERI-12	C-1 – 12	East to West	440	56	8
ERI-13	C-1 – 13	Northeast to Southwest	270	28	10
ERI-14	C-1 – 14	Northeast to Southwest	275	56	5

Method-ID	Attachment-Sheet No.	Profile Orientation	Survey Distance (ft)	Number of Electrodes/ Geophones	Electrode/ Geophone Spacing (ft)
ERI-15	C-1 – 15	West to East	270	28	10
ERI-16	C-1 – 16	West to East	270	28	10
ERI-17	C-1 – 17	Northeast to Southwest	270	28	10
ERI-18	C-1 – 18	Southwest to Northeast	270	28	10
ERI-19	C-1 – 19	South to North	440	56	8
ERI-20	C-1 – 20	Northwest to Southeast	270	28	10
ERI-21	C-1 – 21	Southeast to Northwest	550	56	10
ERI-22	C-1 – 22	Northwest to Southeast	550	56	10
ERI-23	C-1 – 23	Southeast to Northwest	270	28	10
ERI-24	C-1 – 24	Northeast to Southwest	270	28	10
ERI-25	C-1 – 25	East to West	270	28	10
ERI-26	C-1 – 26	South to North	270	28	10
ERI-27	C-1 – 27	Northeast to Southwest	270	28	10
ERI-28	C-1 – 28	Southwest to Northeast	270	28	10
ERI-29	C-1 – 29	Northwest to Southeast	275	56	5
ERI-30	C-1 – 30	South to North	270	28	10
MASW-01	D-1 – 1	West to East	138	24	6
MASW-02	D-1 – 2	Northwest to Southeast	138	24	6
MASW-03	D-1 – 3	Southeast to Northwest	138	24	6
MASW-04	D-1 – 4	Northwest to Southeast	138	24	6
MASW-05	D-1 – 5	Southeast to Northwest	138	24	6
MASW-06	D-1 – 6	North to South	138	24	6
MASW-07	D-1 – 7	Northeast to Southwest	138	24	6
MASW-08	D-1 – 8	Northwest to Southeast	138	24	6

Table 5: Geophysical Survey Parameters – Phase II

Method-ID	Attachment-Sheet No.	Profile Orientation	Survey Distance (ft)	Number of Electrodes/ Geophones	Electrode/ Geophone Spacing (ft)
ERI-31	C-2 – 1	West to East	270	28	10
ERI-32	C-2 – 2	Southwest to Northeast	270	28	10
ERI-33	C-2 – 3	Southwest to Northeast	270	28	10
ERI-34	C-2 – 4	Northwest to Southeast	270	28	10
ERI-35	C-2 – 5	Northwest to Southeast	270	28	10
ERI-36	C-2 – 6	Southwest to Northeast	270	28	10
ERI-37	C-2 – 7	Southwest to Northeast	270	28	10
ERI-38	C-2 – 8	Northwest to Southeast	550	56	10

Method-ID	Attachment-Sheet No.	Profile Orientation	Survey Distance (ft)	Number of Electrodes/ Geophones	Electrode/ Geophone Spacing (ft)
ERI-39	C-2 – 9	Northwest to Southeast	270	28	10
ERI-40	C-2 – 10	Northwest to Southeast	270	28	10
ERI-41	C-2 – 11	North to South	270	28	10
ERI-42	C-2 – 12	Southwest to Northeast	270	28	10
ERI-43	C-2 – 13	Northwest to Southeast	270	28	10
ERI-44	C-2 – 14	West to East	270	28	10
ERI-45	C-2 – 15	West to East	270	28	10
ERI-46	C-2 – 16	North to South	270	28	10
ERI-47	C-2 – 17	Northwest to Southeast	270	28	10
ERI-48	C-2 – 18	Northwest to Southeast	270	28	10
ERI-49	C-2 – 19	Southwest to Northeast	270	28	10
ERI-50	C-2 – 20	North to South	270	28	10
ERI-51	C-2 – 21	Northwest to Southeast	270	28	10
ERI-52	C-2 – 22	Northwest to Southeast	270	28	10
ERI-53	C-2 – 23	Northwest to Southeast	270	28	10
ERI-54	C-2 – 24	Southwest to Northeast	270	28	10
ERI-55	C-2 – 25	Northwest to Southeast	270	28	10
ERI-56	C-2 – 26	Northwest to Southeast	270	28	10
ERI-57	C-2 – 27	Northwest to Southeast	270	28	10
ERI-58	C-2 – 28	Southwest to Northeast	270	28	10
ERI-59	C-2 – 29	Northwest to Southeast	270	28	10
ERI-60	C-2 – 30	Southwest to Northeast	270	28	10
ERI-61	C-2 – 31	West to East	270	28	10
ERI-62	C-2 – 32	Northwest to Southeast	270	28	10
ERI-63	C-2 – 33	West to East	270	28	10
ERI-64	C-2 – 34	Northwest to Southeast	270	28	10
ERI-65	C-2 – 35	West to East	270	28	10
ERI-66	C-2 – 36	North to South	270	28	10
MASW-09	D-2 – 1	Northwest to Southeast	138	24	6
MASW-10	D-2 – 2	Southwest to Northeast	138	24	6
MASW-11	D-2 – 3	Northwest to Southeast	138	24	6

5 Geophysical Investigation Methods

5.1 Electrical Resistivity Imaging (ERI)

ERI is a geophysical method that measures electrical resistivity of soil and rock based on the principles of Ohm's Law; resistivity is the inverse of conductivity. During an ERI investigation, data are gathered through a series of voltage and current measurements taken from surficial electrode arrays. These arrays contain interconnected dipoles that communicate with one another; current is injected at one dipole location, and electrical potential is measured using another dipole. By using different combinations of dipoles, measurements are made at various distances and depths along the survey line. Depending on the required survey resolution and depth of investigation, the electrode arrays can be closely or widely spaced. Resistivity, a measurement in Ohm-meters, is contingent on material properties and geometry.

5.1.1 Theory

Electrical resistance is based upon Ohm's Law:

$$R = \frac{V}{I} \quad [ohms]$$

Where, resistance, **R** (ohms), is equal to the ratio of potential, **V** (volts), to current flow, **I** (amperes).

Resistivity is the measure of the resistance along a linear distance of a material with a known cross-sectional area. Consequently, resistivity is measured in Ohm-meters. This Report presents the ERI results as geo-electrical profiles of modeled resistance plotted as two-dimensional profiles of distance and depth, in units of feet.

Electrical currents propagate as a function of three material properties: (1) ohmic conductivity, (2) electrolytic conductivity, and (3) dielectric conductivity. Ohmic conductivity is a property exhibited by metals. Electrolytic conductivity is a function of the concentration of total dissolved solids and chlorides in the groundwater that exists in the pore spaces of a material. Dielectric conductivity is a function of the permittivity of the matrix of the material. Therefore, the matrix of most soil and bedrock is highly resistive. Of these three properties, electrolytic conductivity is the dominant material characteristic that influences the apparent resistivity values collected by this method. In general, resistivity values decrease in water-bearing rocks and soil with increasing:

- Fractional volume of the material occupied by groundwater,
- Total dissolved solid and chloride content of the groundwater,
- Permeability of the pore spaces, and
- Temperature.

Materials with minimal primary pore space (i.e., limestone, dolomite) or those that lack groundwater in the pore spaces will generally exhibit high resistivity values (Mooney, 1980). Factors contributing to low resistivity include:

- Higher degree of water-bearing void space within soil and rock (only if water exists),
- Higher chloride content of water within soil and rock pore space,
- Lower amount of unsaturated pore space within the material, and
- Higher temperature.

Highly porous and moist or saturated soil will often exhibit very low resistivity values. Additionally, high resistivity values will result from generally inverse conditions (i.e., highly porous and dry conditions). This is, of course, a range, and most earthen materials fall within the range of low to medium resistivity depending on their properties. For these reasons, cavities, voids, highly fractured bedrock, and groundwater can often have representative values related to ERI measurements. In homogeneous ground, the apparent resistivity is the true ground resistivity; however, in heterogeneous ground, the apparent resistivity represents a weighted average of all formations through which the current passes.

5.1.2 Methods

Different acquisition algorithms can be implemented during an investigation. For this investigation, the Dipole-Dipole/Strong-Gradient combined array type, which has proven to be an effective configuration for imaging voids in shallow bedrock settings, was utilized. The measurements were collected to create a two-dimensional image of the variation in resistivity below each survey line. Each image (profile) was developed using an inversion algorithm. The inversion algorithm uses the collected apparent resistivity data to create a model space of resistivity values that would replicate the collected data.

While homogeneous ground conditions represent the true apparent ground resistivity, non-unique values represent a weighted average of the multiple formation variations (Reynolds, 1997). Apparent resistivity values are computed with a forward modelling subroutine, and a smoothness-constrained least-squares optimization routine, creating a pseudosection using finite-difference or finite-element approaches. The pseudosection model is compared to the actual measurements for consistency. A measure of the inversion progress and difference is given by the root-mean-squared error.

5.1.3 Data Collection and Data Processing

In total, sixty-six (66) ERI profiles were produced by acquiring data with an AGI SuperSting R8 resistivity meter and processing the data with EarthImager inversion software (manufactured by AGI). Locational data were recorded using a Trimble Geo7X global positioning system, and the topography along the ERI survey lines were incorporated into the ERI profiles produced for this project.

The approximate depth of penetration of the survey is contingent on a few factors, most of which relate to the overall survey line length. The primary configuration used for the ERI surveys generally obtained an approximate penetration depth of 60 to 65 feet below ground surface (BGS); the configuration used for ERI survey lines ERI-02, ERI-04, ERI-07, ERI-11, ERI-12, ERI-19, ERI-21, and ERI-22 from our Phase I investigation and ERI survey line ERI-38 from our Phase II investigation obtained an approximate penetration depth of more than 100 feet BGS. Two-dimensional ERI profiles from our Phase I and Phase II investigations are provided as **Attachment C-1** and **Attachment C-2,** respectively.

5.2 Multi-channel Analysis of Surface Waves (MASW)

MASW is a seismic method used to evaluate ground stiffness by measuring shear wave velocity (Vs) of the subsurface. Shear modulus is directly linked to a material's stiffness and is one of the most critical engineering parameters. The sampling depth of a particular frequency component of surface waves is in direct proportion to its wavelength, and this property makes the surface wave velocity frequency-dependent (i.e., dispersive). MASW utilizes this dispersive property of surface waves for the purpose of shear wave velocity (Vs) profiling (Choon, 2007). Essentially, MASW is a seismic data acquisition method that utilizes frequencies of a few to several dozen Hz (e.g., 3-60 Hz), and it is acquired using a multi-channel (24 or more channels) recording system and a receiver (geophone) array deployed over a few to a couple hundred meters of distance (e.g., 3-200 m). Active MASW data are produced by generating surface waves with an impact source, such as a sledgehammer impacting a steel plate.

For the Phase I investigation, one-dimensional MASW data were collected at eight (8) locations, with six (6) locations centered over potential anomalies interpreted in ERI profiles, including ERI-01, ERI-04, ERI-20, ERI-21, ERI-23, and ERI-28. Two (2) MASW tests were positioned at locations of potential anomalies interpreted in the ERI profile for ERI-21. An MASW test was also completed over one of the documented open throat features, OT-02, due to the extent and depth of the feature (>20 feet deep). For the Phase II investigation, one-dimensional MASW data were collected at three (3) locations, centered over potential anomalies interpreted from ERI survey results, including ERI-56, ERI-58, and ERI-62. Elastic waves were initiated using an 8-lb sledgehammer striking a steel plate. The velocity data were collected using a Geometrics Geode 24-channel seismograph with 24, 4.5-Hz geophones in an array with a 6-foot spacing between the geophones. Each data file consisted of several recordings (stacks) that were recorded using Geometrics Seismodule Controller software, and the data were processed using ParkSeis (Version 3.0) software. The results of the MASW surveys were processed to generate one-dimensional Vs profiles, which are included in **Attachment D-1** and **Attachment D-2**. An interpretation of the one-dimensional seismic Vs profiles from our Phase I and Phase II investigations are provided in **Table 6** and **Table 7**, respectively.

6 Geophysical Analysis

Ground subsidence is the local downward movement of surface material with little or no horizontal movement. Subsidence is a potential geologic hazard in areas where karst terrain occurs, or where underground mining has taken place. In karst terrain, carbonate-based bedrock (e.g., limestone and dolomite) is dissolved and eroded by water, and karst features form such as open cracks, subsurface channels, disappearing streams, voids, caves, and sinkholes.

ERI methods can provide information about the overall stratigraphy type and change, possible anomalies such as voids or caverns, and water-bearing zones. The majority of the overburden subsurface material appears to be fine grained (clay & silt) with multiple profiles also identifying possible coarse-grained material (likely gravel and/or sand) within the near surface layers. This coarse-grained material typically exhibits moderate resistivity values (300-800 ohm-meters) and is relatively dry compared to the deeper, more saturated layers. The upper sections of many of the profiles suggest areas where rock has been weathered or is likely highly saturated. These zones likely consist of more permeable and erodible materials or fractured rock, making them more prone to movement or collapse in karst areas. Inferred top of rock is observed generally between 0 and 40 feet BGS. Zones of higher resistivity, generally above 3,000 to 10,000 ohm-meters, indicate areas of competent, dry bedrock (likely limestone) at greater depths. The profiles generally show a gradual transition between the overlying fractured/weathered zones and the deeper competent limestone bedrock.

The subsurface conditions across the profiles generally reveal a complex karst landscape, with areas of competent limestone bedrock interspersed with voids, cavities and water-saturated zones. The main type of karst feature interpreted consists of very low resistivity (<100 ohm-m) that are attributed to saturated zones. These saturated zones are likely associated with karst cavities, which have been filled with water or fine-grained sediments over time. Six of the thirty surveys that were performed during the Phase I Investigation suggest the potential presence of karst features (ERI-01, ERI-04, ERI-07, ERI-20, ERI-21, and ERI-28). During the Phase II investigation, a large sinkhole (S-06) was observed approximately 140 feet to the northwest of one of the constraint areas. ERI surveys were completed over and near the sinkhole and nearby in the constraint area. The ERI-64 survey line was positioned over the sinkhole (S-06) and suggests the potential presence of a large, soil-infilled region underneath. Additionally, five (5) ERIs completed during the Phase II investigation (ERI-32, ERI-33, ERI-34, ERI-35, and ERI-51) suggest the presence of isolated regions of low resistivity (<50 ohm-meters) that may represent potential saturated zones.

Shear wave velocities determined from MASW surveys range from approximately 333 to 5,347 feet per second (fps). Shear wave values between 600 fps and 1,200 fps are documented to represent stiff soils, and shear wave values between 1,200 fps and 2,500 fps are documented to represent very dense soils and soft rock. Shear wave values greater than 2,500 fps are documented to represent more competent rock. MASW data did not indicate the presence of air-filled voids at any locations tested. The presence of very soft soil is indicated by shear wave velocities of less than 500 fps, which were only encountered near the surface along ERI-21 (MASW-05); an air-filled void of significant size would exhibit very low shear wave velocities.

6.1 Geophysical and Geological Analysis

Based on our review of the limited geophysical data, the subsurface lithological profile appears to consist primarily of layers of fine-grained overburden material within the upper approximately 0 to 40 feet below grade, which is underlain by generally “pinnacled” limestone or bedrock with abruptly changing depths.

Indications of past dissolution, soil infilling, and water-bearing and air-filled anomalies are present within multiple ERI profiles. It is our opinion that these areas with potential karst anomalies present a high risk to development associated within the proposed solar project areas. **Table 6** and **Table 7** provide summaries of the results of each geophysical survey performed during our Phase I and Phase II geophysical investigations, respectively.

Table 6: Geophysical Survey Observations and Notes – Phase I

Transect ID	Topographic & Geologic Setting	Inferred Depth to Top of Bedrock [feet]	Notes
ERI-01	Gently sloping down to the west	3 to 38	The profile suggests a region of high resistivity (>10,000 ohm-m) exists that may represent an air-filled void as shallow as 21 feet below grade and extends as deep as 52 feet below grade and is located approximately 170 feet east of the start of the survey line. However, this high resistivity zone may represent a region of dry, massive limestone overlain by layers of more weathered limestone. The profile also suggests another possible air-filled void or pocket of dry limestone exists as shallow as 11 feet below grade and extends to as deep as 17 feet below grade and is located approximately 90 feet east of the start of the survey line. This potential anomaly is adjacent to a potential dissolution feature or developing throat a short distance to the west. The profile suggests a layer of fine-grained material is present at the surface that generally exists to 2 to 30 feet below grade.
ERI-02	Sloping down to the southeast	5 to 50+	The profile suggests the presence of potential dissolution features that extend to 50 feet or more below grade. The profile suggests fine-grained overburden overlies the limestone bedrock.
ERI-03	Gently sloping down to the center of the profile from the west and more steeply sloping down to the center of the profile from the east	>9	The profile suggests two potential dissolution features with potential soil-infilling that extend to depths of at least 55 feet below grade. The profile suggests a layer of clay present at the surface that generally exists to at least 9 feet below grade and overlies a limestone layer.
ERI-04	Little to no slope	5 to 28	The profile suggests a large, high resistivity (>10,000 ohm-m) zone exists that may contain potential air-filled voids exists as shallow as 20 feet below grade and extends beyond 100 feet below grade. However, this high resistivity zone may represent a region of dry, massive limestone. This high resistivity area is located approximately 160 feet southeast of the start of the survey line to beyond 380 feet southeast of the start of the survey line. The profiles suggests a layer of clay present at the surface that generally exists to 5 to 28 feet below grade that overlies a limestone layer.
ERI-05	Sloping to the southeast	50+	The profile suggests a layer of fine-grained soil and underlying weathered rock extend close to the base of the profile.

ANS GEO

Transect ID	Topographic & Geologic Setting	Inferred Depth to Top of Bedrock [feet]	Notes
ERI-06	Gently sloping down to the center of the profile from the north and generally flat from the center of the profile to the south	10 to 40	The profile suggests layers of fine-grained soil and weathered rock are thicker on the southern side of the profile. The profile suggests a layer of clay present at the surface that generally exists to 5 to 37 feet below grade that overlies a limestone layer.
ERI-07	Sloping down from the center of the profile toward the north and south	5 to 50+	The profile suggests several potential dissolution features may exist with potential soil infilling to depths of 50 feet or more below grade. However, these features may represent hummocky limestone. The profile suggests fine-grained soil extends from the surface to depths ranging from 5 feet to more than 50 feet below grade and overlies a limestone layer.
ERI-08	Gently sloping down to the east	10 to 30	The profile suggests a potential dissolution feature exists as shallow as 15 feet below grade and extends as deep as 30 feet below grade. The profile suggests fine-grained soil is present at the surface. Fine-grained soil and weathered rock generally exist to depths of 10 to 30 feet below grade and overly a limestone layer.
ERI-09	Sloping down to the northwest	0 to 5	The profile suggests saturated conditions exist in the bedrock at depths of approximately 22 to 35 feet below grade across the entirety of the survey line. The profile generally suggests coarse-grained material or weathered limestone exists at depths ranging from very close to the surface to 5 feet below ground surface.
ERI-10	Gently sloping down to the northwest	20 to 50+	The profile suggests layers of fine-grained soil and weathered rock extend from the surface to depths of more than 50 feet below grade.
ERI-11	Little to no slope	10+	The profile suggests layers of clay and weathered rock are present from the surface to a depth of at least 10 feet below grade and overly a limestone layer.
ERI-12	Generally gently sloping down to the west	15 to 50	The profile suggests layers of fine-grained soil and weathered rock extend from the surface to depths of 15 to 50 feet below grade and overly a limestone layer.
ERI-13	Gently sloping down to the northeast	>10	The profile suggests layers of fine-grained soil and weathered rock extend from the surface to depths of at least 10 feet below grade and overly a limestone layer.
ERI-14	Sloping from both the southwest and northeast to the center of the profile	25 to 42	The profile suggests a potential dissolution feature is forming at a depth of 33 feet below grade, approximately 145 feet northeast of the start of the survey line. The profile suggests layers of fine-grained soil and weathered rock extend 25 to 42 feet below grade and overly a limestone layer.
ERI-15	Sloping down from the west end (start) of the profile to the center of the profile and generally flat on the east side of the profile	7 to 34	The profile suggests fine-grained soil and weathered rock extend from the surface to depths of 7 to 34 feet below grade and overly a limestone layer.

ANS GEO

Transect ID	Topographic & Geologic Setting	Inferred Depth to Top of Bedrock [feet]	Notes
ERI-16	Gently sloping down to the west	28 to 33	The profile suggests near-surface zones of dryer and/or coarser-grained soils. Soil and weathered rock extend from the surface to depths of 28 to 33 feet below grade and overly a limestone layer.
ERI-17	Sloping down to the southwest	45+	The profile suggests fine-grained to coarse-grained soil and weathered rock extend to depths of 42 to 65 feet below grade and overly limestone bedrock.
ERI-18	Sloping down to the southwest near the start of the line and down toward a point approximately 190 feet northeast of the start of the survey line	0 to 12	The profile suggests a potential zone of isolated groundwater/saturated limestone as shallow as 25 feet BGS and extending to as deep as 39 feet below grade. The profile suggests a layer of fine-grained soil extends from the surface to depths of up to 12 feet below grade and overlies limestone bedrock.
ERI-19	Little to no slope	29 to 36	The profiles suggests layers of fine-grained soil and weathered rock extend from the surface to depths of 29 to 36 feet below grade and overly limestone bedrock.
ERI-20	Generally sloping to the southeast	2+	The profile suggests a high resistivity zone (>10,000 ohm-m) exists that may represent an air-filled void as shallow as 16 feet below grade and extending to as deep as 29 feet below grade and is located from approximately 75 feet to 97 feet southeast of the start of the survey line. However, this high resistivity zone may represent pinnacled limestone. Additionally, the profile suggests a large potential dissolution feature with potential raveling soils exists a short distance to the southeast of the potential air-filled void. The profile suggests fine-grained soil and weathered rock extend from the surface to depths of 2 feet to 30 feet below grade and overly a limestone layer.
ERI-21	Sloping to the northwest	0+	The profile suggests a high resistivity zone (>10,000 ohm-m) exists that may represent an air-filled void at a depth as shallow 41 feet below grade and extends to more than 80 feet below grade and at a distance of approximately 355 feet to 430 feet southeast of the start of the survey line. However, the high resistivity zone may represent a region of dry, massive limestone. The profile suggests a potential zone of isolated groundwater flow exists directly to the northwest of the high resistivity zone. The profile also suggests a potential dissolution feature with raveling soils exists at a depth of approximately 50 feet below grade at approximately 190 feet southeast of the start of the survey line. Lastly, the profile suggests layers of fine-grained soil and weathered rock extend from the surface to depths of at least 22 feet below grade and overly limestone bedrock.
ERI-22	Gently sloping down to the northwest	16 to 39	The profile suggests layers of fine-grained soil and weathered rock extend to depths of 16 to 39 feet below grade and overly limestone bedrock.

Transect ID	Topographic & Geologic Setting	Inferred Depth to Top of Bedrock [feet]	Notes
ERI-23	Generally sloping down to the northwest	0 to 10+	The profile suggests a potential dissolution feature with raveling soils exists at a depth of 10 feet below grade at approximately 120 feet southeast of the start of the survey line. On the northwest side of the profile, the ERI data suggest fine-grained soils extend from the surface to depths of at least 10 feet below grade and overly limestone bedrock. On the southeast side of the profile, the ERI data suggests weathered rock or dry, coarse-grained material exists near the surface.
ERI-24	Sloping to the southwest	0+	The profile suggests weathered rock or dry, coarse-grained material is very close to the surface. Zones attributed to more highly saturated conditions are interpreted where lower resistivity values exist.
ERI-25	Sloping down to the west (eastern side), flat (western side)	37 to 57	The profile suggests layers of soil and weathered rock or dry, coarse-grained material extend from the surface to depths of 37 to 57 feet below grade and overly limestone bedrock.
ERI-26	Gently sloping down to the north	0 to 10	The profile suggests a thin layer of fine-grained soil overlies limestone bedrock or dryer, coarse-grained material. Low resistivity values at depths below 20 to 30 feet suggest saturated conditions.
ERI-27	Sloping down to the southwest	7+	The profile suggests a potential dissolution feature exists near the start of the survey line and extends to approximately 100 feet northeast of the start of the survey line at greater depths. The profile suggests layers of fine-grained soil and weathered rock are as thin as 7 feet near the center of the profile and overlies limestone bedrock. The overburden thickness is interpreted to be greater near the southwest end of the line.
ERI-28	Sloping to the northeast	0 to 12	The profile suggests a layer of fine-grained soil extends to depths of up to 12 feet below grade and overlies limestone bedrock, although sections of the profile suggest the presence of limestone at the surface or dry, coarse-grained material.
ERI-29	Sloping down from the southeast to the center of the profile and gently sloping from the northwest to the center of the profile	0 to 40+	The profile suggests layers of fine-grained soil and weathered rock, or dry, coarse-grained material extend from the surface to depths of more than 40 feet. Low resistivity values generally at depths below 20 feet suggest saturated conditions.
ERI-30	Gently sloping down from the northern and southern ends of the profile to the center	0 to 40+	The profile generally suggests shallow rock on the southern side of the profile, but thicker layers of fine-grained soils and weathered rock are interpreted on the northern side of the profile. The overburden thickness is interpreted to range from the surface to more than 40 feet below grade and to be underlain overlies a limestone layer, although sections of the profile suggest the presence of limestone at the surface.

Transect ID	Topographic & Geologic Setting	Inferred Depth to Top of Bedrock [feet]	Notes
MASW-01	Little to no slope	N/A	This one-dimensional Vs profile shows a sharp increase in seismic velocity at ~14 feet below grade, indicative of a transition from stiff soils to competent rock. The Vs profile shows another general increase in seismic velocity between ~14 to ~35 feet below grade, and then a slight decrease in seismic velocity below 35 feet. Below 35 feet, the Vs profile shows consistent seismic velocities.
MASW-02	Little to no slope	N/A	This one-dimensional Vs profile generally shows an increase in seismic velocity with depth in the upper ~9 feet below grade followed by a slight decrease in seismic velocity from ~9 to ~27 feet below grade. Below a depth of ~27 feet, the Vs profile shows generally increasing seismic velocities, indicative of a transition from very dense soils and soft rock to more competent rock.
MASW-03	Gently sloping down to the southeast	N/A	This one-dimensional Vs profile shows a sharp increase in seismic velocity at ~17 feet below grade, indicative of a transition from stiff soils to competent rock. The Vs profile generally shows consistent seismic velocities below ~17 feet.
MASW-04	Gently sloping to the northwest	N/A	This one-dimensional Vs profile shows generally consistent seismic velocities in the upper ~16 feet followed by a sharp increase in seismic velocity, indicative of a transition from stiff soils to competent rock. The Vs profile shows an increase in seismic velocity between ~16 to ~42 feet, followed by a decrease in seismic velocity.
MASW-05	Gently sloping to the northwest	N/A	This one-dimensional Vs profile shows a sharp increase in seismic velocity at ~3 feet below grade, indicative of a transition from loose soils to very dense soils and soft rock. The Vs profile shows a slight decrease in seismic velocity between ~3 and ~20 feet below grade, followed by an increase in seismic velocity from ~20 to ~37 feet below grade. The Vs profile then shows a slight decrease in seismic velocity and then consistent values below ~37 feet.
MASW-06	Little to no slope	N/A	This one-dimensional Vs profile shows generally consistent seismic velocities in the upper ~18 feet below grade, followed by a sharp increase in seismic velocity, indicative of a transition from stiff and very dense soils to competent rock. There is another increase in seismic velocity between ~18 and ~33 feet below grade, followed by a slight decrease in seismic velocity at ~33 feet and consistent values at greater depths.
MASW-07	Gently sloping to the northeast	N/A	This one-dimensional Vs profile shows a sharp increase in seismic velocity at ~4 feet below grade, indicative of a transition from loose soils to competent rock. The Vs profile shows a slight decrease in seismic velocity from ~4 to ~18 feet below grade and an increase in seismic velocity from ~26 to ~35 feet below grade. At 47 feet below grade, the Vs profile shows a slight decrease in

Transect ID	Topographic & Geologic Setting	Inferred Depth to Top of Bedrock [feet]	Notes
			seismic velocity and then consistent values to the maximum depth surveyed.
MASW-08	Little to no slope	N/A	This one-dimensional Vs profile shows generally consistent seismic velocities in the upper ~18 feet followed by a sharp increase in seismic velocity, indicative of a transition from stiff soils to competent rock. Seismic velocities are generally consistent between ~18 and ~57 feet below grade, followed by an increase in seismic velocity. The seismic velocity shows a decrease at a depth of 74 feet.

Table 7: Geophysical Survey Observations and Notes – Phase II

Transect ID	Topographic & Geologic Setting	Inferred Depth to Top of Bedrock [feet]	Notes
ERI-31	Gently sloping down to the west	-	The profile suggests fine-grained material exists at the surface and extends to at least ~60 feet BGS.
ERI-32	Sloping down to the southwest	-	The profile suggests fine to coarse-grained material exists in the upper 15 to 20 feet BGS followed by a layer of softer and/or more saturated soils. The profile suggests pockets of low resistivity (<50 ohm-m) exist from ~15 to 35 feet BGS that may represent isolated saturated regions.
ERI-33	Gently sloping down to the southwest	40+	The profile suggests fine to coarse-grained material exists in the upper ~12 feet BGS followed by a layer of softer and/or more saturated soils. The profile suggests pockets of low resistivity (<50 ohm-m) exist from ~13 to 30 feet BGS that may represent isolated saturated regions. The profile suggests the top of rock may exist at depths greater than 40 feet BGS.
ERI-34	Sloping down to the southeast	40 to 50	The profile suggests fine to coarse-grained material exists in the upper ~12 to 14 feet BGS followed by a layer of softer and/or more saturated soils. The profile suggests a layer of low resistivity (<50 ohm-m) exists from ~12 to 35 feet BGS that may represent an isolated saturated region. The profile suggests the top of rock may exist between ~40 and 50 feet BGS.
ERI-35	Gently sloping down to the southeast	25 to 57	The profile suggests fine-grained material exists in the upper ~25 to 57 feet BGS followed by layers of rock that generally become more competent with depth. The profile suggests a small pocket of low resistivity (<50 ohm-m) exists from 0 to ~11 feet BGS that may represent an isolated saturated region.
ERI-36	Generally flat	-	The profile suggests fine to coarse-grained material exists in the upper ~12 feet BGS followed by layers of fine-grained material that generally become stiffer with depth.

ANS GEO

Transect ID	Topographic & Geologic Setting	Inferred Depth to Top of Bedrock [feet]	Notes
ERI-37	Generally flat	11	The profile suggests fine-grained material generally exists in the upper ~11 feet BGS followed by layers of rock that generally become more competent with depth.
ERI-38	Gently sloping down to the southeast	10	The profile suggests fine to coarse-grained material generally exists in the upper ~10 feet BGS followed by layers of rock that generally become more competent with depth.
ERI-39	Sloping down to the southeast	25+	The profile suggests fine to coarse-grained material generally exists at the surface extending to at least 25 feet BGS, followed by layers of rock.
ERI-40	Generally flat	-	The profile suggests fine to coarse-grained material generally exists at the surface and extends to at least ~60 feet BGS.
ERI-41	Generally flat	60+	The profile suggests fine to coarse-grained material generally exists at the surface and extends to at least ~60 feet BGS, followed by a potential layer of rock.
ERI-42	Gently sloping down to the southwest	23 to 41	The profile suggests fine to coarse-grained material generally exists in the upper ~23 to 41 feet BGS followed by layers of rock that generally become more competent with depth.
ERI-43	Gently sloping down to the southeast	45	The profile suggests a layers of fine and coarse-grained material exist in the upper ~45 feet BGS. The profile suggests layers of rock exist at a depth of ~45 feet BGS that generally becomes more competent with depth.
ERI-44	Generally flat	-	The profile suggests layers of fine to coarse grained material exist at the surface and extend to at least ~60 feet BGS.
ERI-45	Sloping down to the west	-	The profile suggests layers of fine to coarse-grained material exists in the upper ~31 to 60 feet BGS followed by layers of potentially water-filled fractures, weathered rock or soft sediment that has accumulated in karst depressions.
ERI-46	Sloping down to the north	-	The profile suggests layers of fine to coarse-grained material exists at the surface and extend to at least ~60 feet BGS.
ERI-47	Gently sloping down to the northwest	-	The profile suggests layers of fine to coarse-grained material exist at the surface and extend to at least ~60 feet BGS.
ERI-48	Gently sloping down to the southeast	12 to 36	The profile suggests fine to coarse-grained material exists in the upper ~12 to 36 feet BGS followed by layers of rock that generally become more competent with depth.
ERI-49	Sloping down to the southwest	48 to 65	The profile suggests fine to coarse-grained material exists in the upper ~48 to 65 feet BGS followed by layers of rock that generally become more competent with depth.

Transect ID	Topographic & Geologic Setting	Inferred Depth to Top of Bedrock [feet]	Notes
ERI-50	Sloping down to the south	61+	The profile suggests coarser-grained and/or dryer material exists in the upper ~20 feet BGS followed by layers of fine to coarse-grained material from ~20 to 61 feet BGS. The profile suggests rock may exist as shallow as ~61 feet BGS.
ERI-51	Sloping down to the northwest	36 to 55	The profile suggests fine to coarse-grained material exists in the upper ~36 to 55 feet BGS followed by layers of rock that generally become more competent with depth. The profile suggests an isolated region of low resistivity (<50 ohm-m) exists from ~15 to 28 feet BGS that may represent a region of saturated fine-grained material.
ERI-52	Gently sloping down to the northwest	43 to 50	The profile suggests coarse-grained material exists in the upper ~16 feet BGS followed by a layer of softer, fine to coarse-grained material from ~16 to 50 feet BGS. The profile suggests rock exists at ~43 to 50 feet BGS and generally becomes more competent with depth.
ERI-53	Sloping down to the southeast	43	The profile suggests coarser-grained and/or dryer material exists in the upper ~15 feet BGS followed by layers of fine to coarse-grained material from ~15 to 43 feet BGS. The profile suggests rock exists at ~43 feet BGS and generally becomes more competent with depth.
ERI-54	Gently sloping down to the southwest	40+	This profile suggests coarser-grained and/or dryer material exists in the upper ~15 feet BGS followed by a layer of softer, fine to coarse-grained material from ~15 to 40 feet BGS. The profile suggests rock exists as shallow as ~40 feet BGS and generally becomes more competent with depth.
ERI-55	Sloping down to the southeast	30+	The profile suggests coarser-grained and/or dryer material exists in the upper ~15 feet BGS followed by a layer of softer, fine to coarse-grained material from ~15 to 30 feet BGS. The profile suggests rock exists as shallow as ~30 feet BGS and generally becomes more competent with depth.
ERI-56	Sloping down to the southeast	0 to 24	The profile suggests fine to coarse-grained material generally exists in the upper ~24 feet BGS followed by layers of rock. The profile suggests rock may exist at the surface along sections of the transect, including a potential region of floating bedrock from ~60 to 80 feet southeast of the start of the profile. The profile suggests a region of very high resistivity (>10,000 ohm-m) exists at ~59 feet BGS that may represent more massive limestone. The profile also suggests a region of soil infilling may exist to ~26 feet BGS from ~80 to 105 feet southeast of the start of the profile.
ERI-57	Sloping down to the northwest	9 to 27	The profile suggests fine to coarse-grained material exists in the upper ~9 to 27 feet BGS followed by layers of rock that generally become more competent with depth.

Transect ID	Topographic & Geologic Setting	Inferred Depth to Top of Bedrock [feet]	Notes
ERI-58	Sloping down to the southwest	9 to 28	The profile suggests fine to coarse-grained material exists in the upper ~9 to 28 feet BGS followed by layers of rock that generally become more competent with depth. The profile suggests a region of high resistivity (≥7,000 ohm-m) exists at ~24 feet BGS that may represent more massive limestone or a zone of relatively small air-filled voids with depth. Indications of previous dissolution, void formation, and soil-infilling may exist around horizontal distances of approximately 140 and 210 feet from the start of the profile. Top of bedrock may be pinnacled due to these features.
ERI-59	Sloping down to the southeast	30 to 43	The profile suggests coarser-grained and/or dryer material exists in the upper ~16 feet BGS followed by a layer of fine to coarse-grained material. The profile suggests layers of rock exist starting at 30 to 43 feet BGS that generally become more competent with depth.
ERI-60	Sloping down to the southwest	8 to 40	The profile suggests coarse-grained material exists in the upper ~14 feet BGS followed by a layer of fine to coarse-grained material. The profile suggests layers of rock exist starting at 8 to 40 feet BGS that generally become more competent with depth.
ERI-61	Gently sloping down to the west	20 to 40	The profile suggests fine to coarse-grained material exists in the upper ~20 to 40 feet BGS followed by layers of rock that generally become more competent with depth.
ERI-62	Gently sloping down to the northwest	28	The profile suggests fine to coarse-grained material generally exists in the upper ~28 feet BGS followed by layers of rock that generally become more competent with depth. The profile suggests a region of very high resistivity (>10,000 ohm-m) exists starting at ~55 feet BGS that may represent more massive limestone.
ERI-63	Gently sloping down to both the west and the east	15	The profile suggests fine to coarse-grained material generally exists in the upper ~15 feet BGS followed by layers of rock that generally become more competent with depth.
ERI-64	Sloping down to both the northwest and the southeast	0+	The profile suggests fine to coarse-grained material generally exists at the surface and extends to ~10 to 20 feet BGS. However, the profile suggests rock may exist near or at the surface at portions of the profile. The profile suggests a region of soil infilling within a karstic feature exists directly underneath observed sinkhole S-06. This region of soil infilling possibly extends from the surface to greater than 50 feet BGS and varies between ~15 to 40 feet in width.
ERI-65	Sloping down to the west	4 to 25	The profile suggests fine-grained material exists in the upper ~4 to 25 feet BGS followed by layers of rock that generally become more competent with depth.
ERI-66	Gently sloping down to the south	13 to 28	The profile suggests fine-grained material exists in the upper ~13 to 28 feet BGS followed by layers of rock that generally become more competent with depth.

Transect ID	Topographic & Geologic Setting	Inferred Depth to Top of Bedrock [feet]	Notes
MASW-09	Sloping down to the southeast	N/A	This one-dimensional Vs profile shows a sharp increase in seismic velocity at ~20 feet BGS, indicative of a transition from stiff soils to competent rock. However, the Vs profile shows a decrease in seismic velocity at ~35 feet BGS, indicative of a transition to softer rock.
MASW-10	Sloping down to the southwest	N/A	This one-dimensional Vs profile shows an increase in seismic velocity at ~53 feet BGS, indicative of a transition from very dense soils and soft rock to competent bedrock. The Vs profile shows an increase in seismic velocity at depths >80 feet BGS, indicative of bedrock generally becoming more competent with depth.
MASW-11	Gently sloping down to the northwest	N/A	This one-dimensional Vs profile shows a sharp increase in seismic velocity at ~17 feet BGS, indicative of a transition from stiff soils to competent bedrock. The Vs profile shows the seismic velocity is generally consistent at depths >17 feet BGS.

In areas where voids have potentially formed, it is our opinion that they will present a high risk to development associated with the solar project. It is likely that additional potential karst features exist, which are located outside the areas surveyed by ANS Geo.

7 Risk Evaluation and Conclusions

ANS Geo understands that the project site is intended to support a PV development consisting of racking and modules (panels), inverters, and other accessory structures. To aid in site planning and development, it is important to assess the relative potential risk across various portions of the site. This is necessary to minimize the potential for siting of critical project components and structures (e.g., inverters, transmission lines, etc.) within areas with higher geologic risk, particularly where the potential for settlement and ground movement is more significant.

From our field observations, including “walk-through” assessments and geophysical surveys, ANS Geo has identified several observable karst features, such as surface depressions, open throat sinkholes, air-filled voids, and dissolution features. These findings suggest that the northern and southwestern sections of the site generally pose a moderate to high risk for karst-related hazards in terms of design and construction of the proposed solar facility.

Karst landscapes are dynamic, meaning that additional karst features (such as sinkholes and dissolution zones) will likely occur over time. Areas currently mapped as karst-prone may worsen or evolve, and areas where karst was not previously identified may reveal new features in the future. Given these circumstances, it is likely that karst development will continue throughout the lifespan of the project, and operations and maintenance plans should include provisions for addressing the effects and remediation of karst-related subsidence.

If design and development proceed, appropriate buffers from known karst features should be implemented. Additionally, the use of a terrain-following racking system that accommodates differential movement such as Nevados or Nextracker XTR, should be considered. Prior to or immediately before the start of construction, further investigations and site “walk-throughs” should be conducted through areas which were not previously investigated to ensure there are no actively forming karst features that require remediation or additional buffers.

On-going monitoring and maintenance will be necessary throughout the project's lifespan. We anticipate the potential for sinkholes, ground movement, and collapses may impact the structural integrity of racking systems, inverter pads, and other related structures.

If development proceeds at the project site, the risk of sinkhole-related damage to the project site will persist through construction and into long-term operation and maintenance of the facility. Therefore, the primary goal of karst management and mitigation is to avoid known karst areas during initial planning and design phases by using adequate buffer distances and focusing development on non or less-karstic areas. However, if karst features are unavoidable due to land constraints, or other environmental or engineering constraints, karst minimization and mitigation measures must be implemented.

7.1 Offset and Buffers

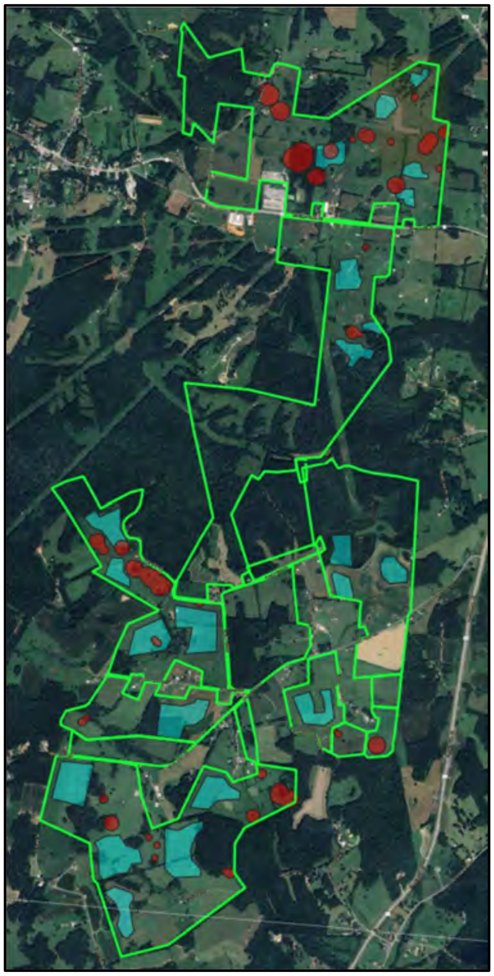
ANS Geo has provided a **Karst Risk Map** as **Attachment F**, which is also shown in **Figure 5** (below), based on our observations and geophysical investigation results. This map identifies areas with **moderate to high risk** based on our field investigations. We have also provided recommended **buffer distances** around identified features based on our experience.

- **Moderate risk areas**: A 75-foot buffer is recommended around the edge of closed surface depressions or open-throat holes with no suggestion of air-filled or water-filled anomalies in the geophysical data.
- **High risk areas**: A 150-foot buffer is recommended around karst features identified through geophysical data. These features include dissolution zones, areas of potentially abundant bedrock fracturing and soil-infilled cavities, observed sinkholes, and clusters of karst features in close proximity.

It is important to note that these buffer recommendations are based on currently known and identified features. Additional features may be revealed during construction, over time, and/or during subsequent studies conducted at the project site. Should additional features be revealed at a later date, such as during construction, ANS Geo should be contacted to allow us to evaluate the feature and provide additional recommended buffers and remediation measures, if necessary, to allow for the development on or around the newly-identified features.

While the risk of karst can be mitigated by avoiding or remediating known karst features, it is important to recognize that remediation alone may not completely address concerns about karst-related damage to essential infrastructure over the long term. ANS Geo performed geophysical investigations at selected locations on the project site, meaning that the full extent of karst-related risks may not have been captured, and subsidence risks could emerge over time.

Figure 5: Karst Risk Buffer Map



Red polygons represent recommended buffer zones. Blue polygons represent Phase II Constraint Areas provided by Candela Renewables.

7.2 Karst Management and Mitigation During Design and Construction

We recognize that the investigation completed by ANS Geo cannot cover the entirety of the project site, and these studies only cover a snapshot in time of the karst environment. Along with consideration to the buffers recommended by ANS Geo, we have provided a *Karst Management and Mitigation Plan* as **Attachment G** to outline potential monitoring activities and corrective measures that Candela Renewables may implement if karst features are encountered during the various stages of construction and long-term operation and maintenance of the facility.

7.3 Presence of Variable Depths to Bedrock

The depth to bedrock is interpreted to vary significantly across the project site. Pinnacled bedrock may be present within the project area. From the perspective of development and construction of the PV facility, this geologic condition is likely to cause erratic refusals when attempting to install directly-driven array piles at the project site. Due to the presence of shallow rock, pre-drilling will likely need to be completed. When pre-drilling at the site, each hole should be filled with flowable fill, or compacted, native soil, that matches the original infiltration rate of the native soil to avoid creating open conduits for water, which may trigger, aggravate, and re-activate karst development. As some structures may be founded on drilled piers, it is recommended that the competency and presence of bedrock is verified at critical structure locations where foundations are assumed to be founding on top of bedrock. This can be accomplished by a technique such as air-rotary drilling at each critical structure location to determine if voids or soft soils are present at the assumed top of bedrock.

7.4 Stormwater and Grading

ANS Geo understands that the development of this site may cause changes in site grading, topography, and the existing drainage patterns of run-on, run-off, and infiltration at the project site. It is outside the current scope of ANS Geo's work to complete review or engineering evaluation for the design of stormwater management basins; however, ANS Geo notes that karst is a living environment. Major changes in existing hydrologic systems can significantly increase the development of new karst features or exacerbate existing karst features. As water flows underground, it slowly dissolves and erodes the carbonate bedrock creating underground drainage pathways and voids. Over time, these pathways and voids increase in size and begin washing away the soil mantel above the voids. As the soil mantel becomes thinner, eventually it begins to subside creating a potential sinkhole. The driving factor in the formation of karst is the flow of water. Therefore, the goal with water management in karst topography is to keep new drainage paths and water flow quantities similar to the existing, pre-development paths and quantities.

While foundations can be designed to accommodate the karstic terrain, ANS Geo re-iterates the criticality of civil/site impacts on the project. Karst-specific guidance and publicly-available references should be reviewed and considered in the design of stormwater management features. These references include best-practice guidance for stormwater design by organizations such as the Tennessee Department of Environment and Conservation (TDEC) in its Tennessee Permanent Stormwater Management and Design Guidance Manual, Appendix B (Stormwater Design Guidelines for Karst Terrain), the Virginia Stormwater Management Handbook, Chapter 6, Appendix 6-B (Stormwater Design Guidelines for Karst Terrain in Virginia), and other references. The documents are not intended to be exhaustive recommendations, but rather a summary of some of the available best practices related to civil/site design in karst environments.

8 Discussion and Limitations

ANS Geo notes that the specific karst-related findings and recommendations presented within this Report are based on a limited investigation program, and karst formation is an on-going, "living" process that cannot be predicted. Any identification of karst features or recommendations are taken as a snapshot in time and are subject to change due to natural processes. Any mapping provided by ANS Geo has been provided as a visual representation of the existing geotechnical and geophysical information available to-date. A lack of identified risk areas should not be solely relied upon for any engineering design, cost analysis, or prediction of construction conditions without additional field investigation to confirm the presence or absence of karst features in areas not investigated or surveyed as part of our work.

ANS Geo provides absolutely no warranties, expressed or implied, on the accuracy of this karst mapping or its fitness for use for any purpose other than to visualize the existing information collected to-date. Geophysical investigations involve non-invasive methods of interpreting physical properties of the shallow earth using electrical, electromagnetic, or mechanical energy. This document contains geophysical interpretations of responses to induced or real-world phenomena. As such, the measured phenomena may be impacted by variables not readily identified in the field that can result in false-positive and/or false-negative interpretations. ANS Geo makes no representations or warranties as to the accuracy of the interpretations. The extent of reliability of the survey is based on the specific areas where surveys were performed; areas outside surveyed alignments may contain variations from the conditions noted.

We note that the current investigation is considered limited and preliminary, and that additional geotechnical investigations including an appropriate number of soil borings and associated laboratory testing of soil material have been or will be completed at each site prior to detailed design and construction.

Given the site size, it is expected that an EPC will complete additional investigations to support final design and construction. Should site development proceed, if ANS Geo's limited and preliminary geophysical investigation is used for final design, our findings shall only be valid for the exact and specific locations at which field investigations were completed. All other areas and regions of the site that are not investigated under a final investigation to confirm if our preliminary and limited investigation is valid for the entire project site, will be at the risk of the individual or entity using this Report.

Should the scope of the project or proposed site layout change, or more investigation area become available, ANS Geo should be given the opportunity to review the applicability of the collected information and modify our recommendations, as needed.

9 References

Xia, J.; Miller, R. D.; Park, C. B.; Hunter J. A.; Harris, J. B.; and Ivanov, J. (2002) Comparing shear-wave velocity profiles inverted from multi-channel surface wave with borehole measurements: Soil Dynamics Earthquake Engineering, Vol. 22, pp. 181-190.

AGI (2017) EarthImager Program. Advanced Geosciences Inc., Austin, Texas.

DeGroot-Hedlin, C. and Constable, S. (1990) Occam's inversion to generate smooth, two-dimensional models from magnetotelluric data. Geophysics, V. 55, 1613-1624.

Greenwood, William (2015) In Situ Shear Wave Velocity Measurements in Rocks. Rock Mechanics – Geo Engineer.

Park, Choon. MASW Analysis of Bedrock Velocities (Vs and Vp), Park Seismic LLC, Shelton, Connecticut.

Park, Choon (2007) Multichannel analysis of surface waves (MASW) – active and passive methods, The Leading Edge.

Mavko, Gary. Conceptual Overview of Rock and Fluid Factors that Impact Seismic Velocity and Impedance. Standford Rock Physics Laboratory.

Mooney, H.M. (1980) Handbook of Engineering Geophysics: Volume 2: Electrical Resistivity, Bison Instruments, Inc.

Reynolds, J.M. (1997) An Introduction to Applied and Environmental Geophysics, John Wiley, Chichester, New York, 796 p.

Mabee, S.B., Hardcastle, K.C., and Wise, D.U. (1994) A method of collecting and analyzing lineaments for regional-scale fractured-bedrock aquifer studies: Ground Water, v. 32, no. 6, p. 884-894.

Attachment A-1

Observed Karst Feature Photo Log – Phase I

Media 1: D-01

Lat: 36.88514

Long: -85.68671

Bearing: SE

Date Taken: 06/07/2024

Weather: Sunny

Taken By: Zachary Agnew

Tags:

Media 2: D-02

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/07/2024

Weather:

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 1 of 21

Media 3: D-03

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/07/2024

Weather:

Taken By:

Tags:

Media 4: D-04

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/07/2024

Weather:

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 2 of 21

Media 5: D-05

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

Media 6: D-06

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 3 of 21

Media 7: D-07

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

Media 8: D-08

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 4 of 21

Media 9: D-09

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

Media 10: D-10

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 5 of 21

Media 11: D-11

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

Media 12: D-12

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/10/2024

Weather: Partly cloudy

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 6 of 21

Media 13: D-13

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/11/2024

Weather: Clear

Taken By:

Tags:

Media 14: D-14

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/11/2024

Weather: Clear

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 7 of 21

Media 15: D-15

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/12/2024

Weather: Clear

Taken By:

Tags:

Media 16: D-16

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/12/2024

Weather: Clear

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 8 of 21

Media 17: D-17

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/12/2024

Weather: Clear

Taken By:

Tags:

Media 18: D-18

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/12/2024

Weather: Clear

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 9 of 21

Media 19: D-19

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/12/2024

Weather: Clear

Taken By:

Tags:

Media 20: D-20

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/12/2024

Weather: Clear

Taken By:

Tags:

ANS GEO		
	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 10 of 21

Media 21: D-21

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/13/2024

Weather: Sunny

Taken By:

Tags:

Media 22: D-22

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/13/2024

Weather: Sunny

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 11 of 21

Media 23: D-23

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/13/2024

Weather: Sunny

Taken By:

Tags:

Media 24: D-24

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/13/2024

Weather: Sunny

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 12 of 21

Media 25: OT-01

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

Media 26: OT-02

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 13 of 21

Media 27: OT-03

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/10/2024

Weather: Partly cloudy

Taken By:

Tags:

Media 28: OT-04

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/13/2024

Weather: Sunny

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 14 of 21

Media 29: PKF-01

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

Media 30: PKF-02

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 15 of 21

Media 31: PKF-03

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

Media 32: PKF-04

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

Project Name: Summer Shade	
Project Location: Summer Shade, KY, USA	
Client: Candela Renewables	Project Code:
Preparer: Danielle Todd	Reviewer:
Report Date: 2024-06-18	Page Number: 16 of 21

Media 33: PKF-05

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

Media 34: PKF-06

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/10/2024

Weather: Partly cloudy

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 17 of 21

Media 35: PKF-07

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/11/2024

Weather: Clear

Taken By:

Tags:

Media 36: PKF-08

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/11/2024

Weather: Clear

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 18 of 21

Media 37: PKF-09

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/13/2024

Weather: Sunny

Taken By:

Tags:

Media 38: S-01

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/07/2024

Weather:

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 19 of 21

Media 39: S-02

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/07/2024

Weather:

Taken By:

Tags:

Media 40: S-03

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/09/2024

Weather:

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 20 of 21

Media 41: S-04

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/12/2024

Weather: Clear

Taken By:

Tags:

Media 42: S-05

Lat: 36.88514

Long: -85.68673

Bearing: N

Date Taken: 06/13/2024

Weather: Sunny

Taken By:

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: Summer Shade, KY, USA	
	Client: Candela Renewables	Project Code:
	Preparer: Danielle Todd	Reviewer:
	Report Date: 2024-06-18	Page Number: 21 of 21

Attachment A-2

Observed Karst Feature Photo Log – Phase II

Media 1: D-25

Lat: 36.84266

Long: -85.69746

Bearing: N

Date Taken: 09/18/2024

Weather:

Taken By: Zachary Agnew

Tags:

Media 2: D-26

Lat: 36.85502

Long: -85.69738

Bearing: N

Date Taken: 09/21/2024

Weather:

Taken By: Zachary Agnew

Tags:

ANS GEO	Project Name: Summer Shade	
	Project Location: V8P7+38 Summer Shade, KY, USA	
	Client:	Project Code:
	Preparer: Zachary Agnew	Reviewer:
	Report Date: 2024-10-08	Page Number: 2 of 4

Media 3: D-27

Lat: 36.85511

Long: -85.69752

Bearing: N

Date Taken: 09/21/2024

Weather:

Taken By: Zachary Agnew

Tags:

Media 4: D-28

Lat: 36.85524

Long: -85.69764

Bearing: N

Date Taken: 09/21/2024

Weather:

Taken By: Zachary Agnew

Tags:

ANS GEO

Project Name: Summer Shade	
Project Location: V8P7+38 Summer Shade, KY, USA	
Client:	Project Code:
Preparer: Zachary Agnew	Reviewer:
Report Date: 2024-10-08	Page Number: 3 of 4

Media 5: S-06

Lat: 36.88303

Long: -85.67920

Bearing: N

Date Taken: 09/21/2024

Weather:

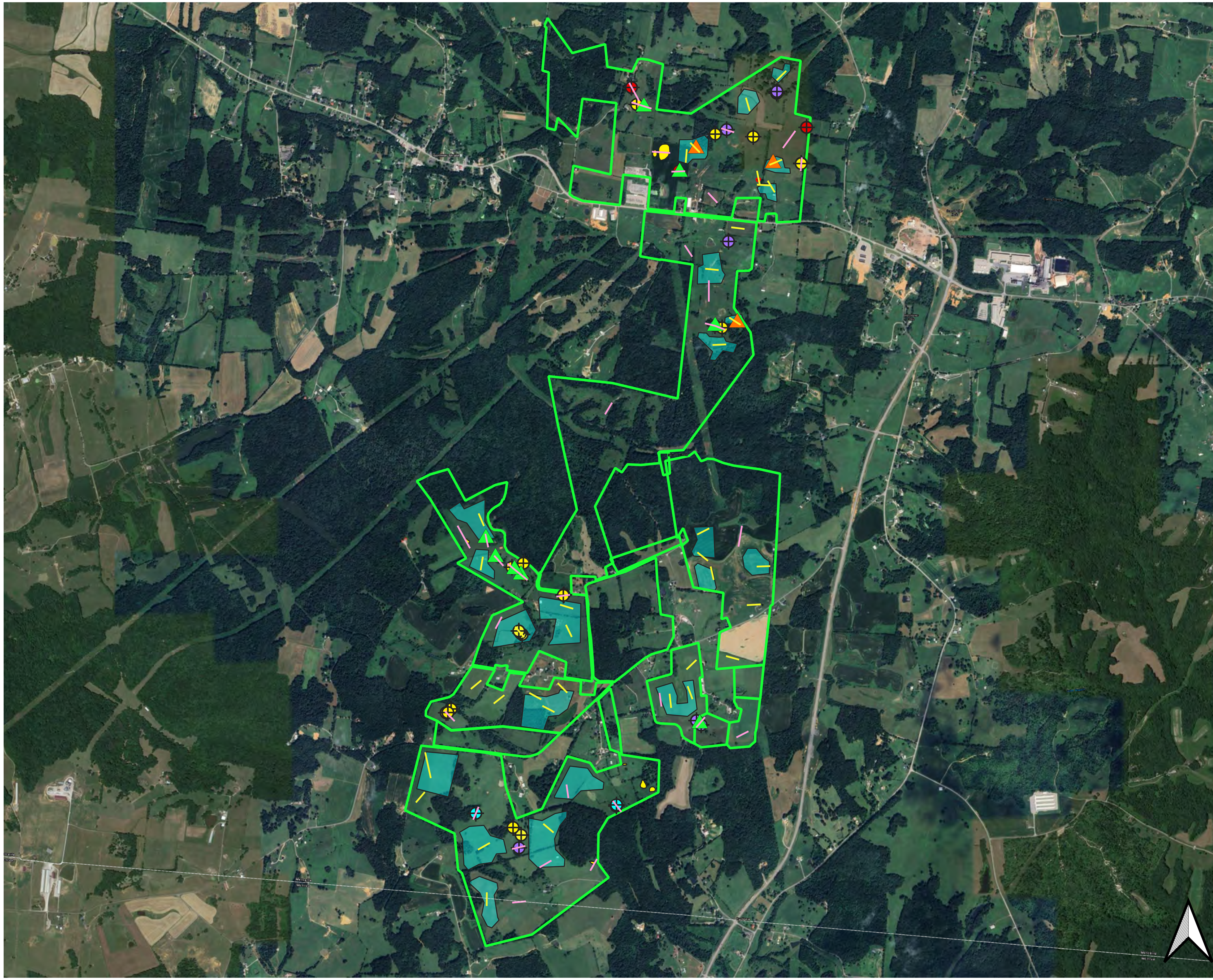
Taken By: Zachary Agnew

Tags:

Project Name: Summer Shade	
Project Location: V8P7+38 Summer Shade, KY, USA	
Client:	Project Code:
Preparer: Zachary Agnew	Reviewer:
Report Date: 2024-10-08	Page Number: 4 of 4

Attachment B

Location Plans



ANS GEO

Client:

Candela RENEWABLES

GEOPHYSICAL LOCATION PLAN

CANDELA RENEWABLES
SUMMER SHADE SOLAR
PROJECT - PHASE I & II
METCALFE & MONROE
COUNTIES, KENTUCKY

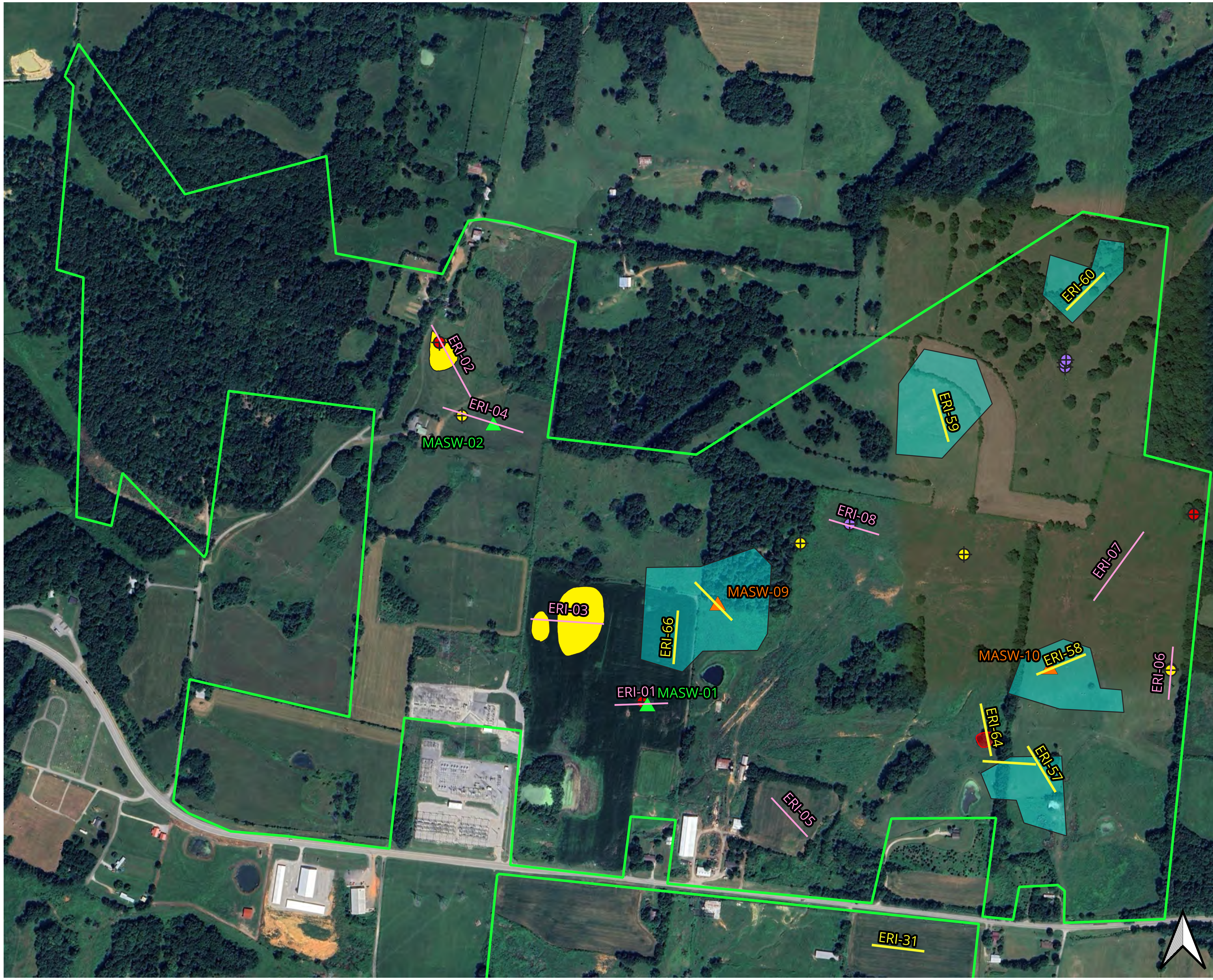
Legend

- Project Boundaries
- Constraint Areas
- As-Completed ERI Transects - Phase I
- As-Completed ERI Transects - Phase II
- As-Completed MASW Locations - Phase I
- As-Completed MASW Locations - Phase II
- Depression
- Depression
- Sinkhole
- Sinkhole
- Open Throat
- Potential Karst Feature
- Potential Karst Feature

0 2,500 5,000 ft

Absolute Scale: 1 inch = 2,500 feet
Scale at 11" x 17" AS SHOWN

Prepared by: Zachary Agnew
Date: October 2, 2024
Drawing Number: GLP Rev.0



ANS GEO

Client:

Candela RENEWABLES

GEOPHYSICAL LOCATION PLAN - NORTHERN SECTION

CANDELA RENEWABLES SUMMER SHADE SOLAR PROJECT - PHASE I & II METCALFE & MONROE COUNTIES, KENTUCKY

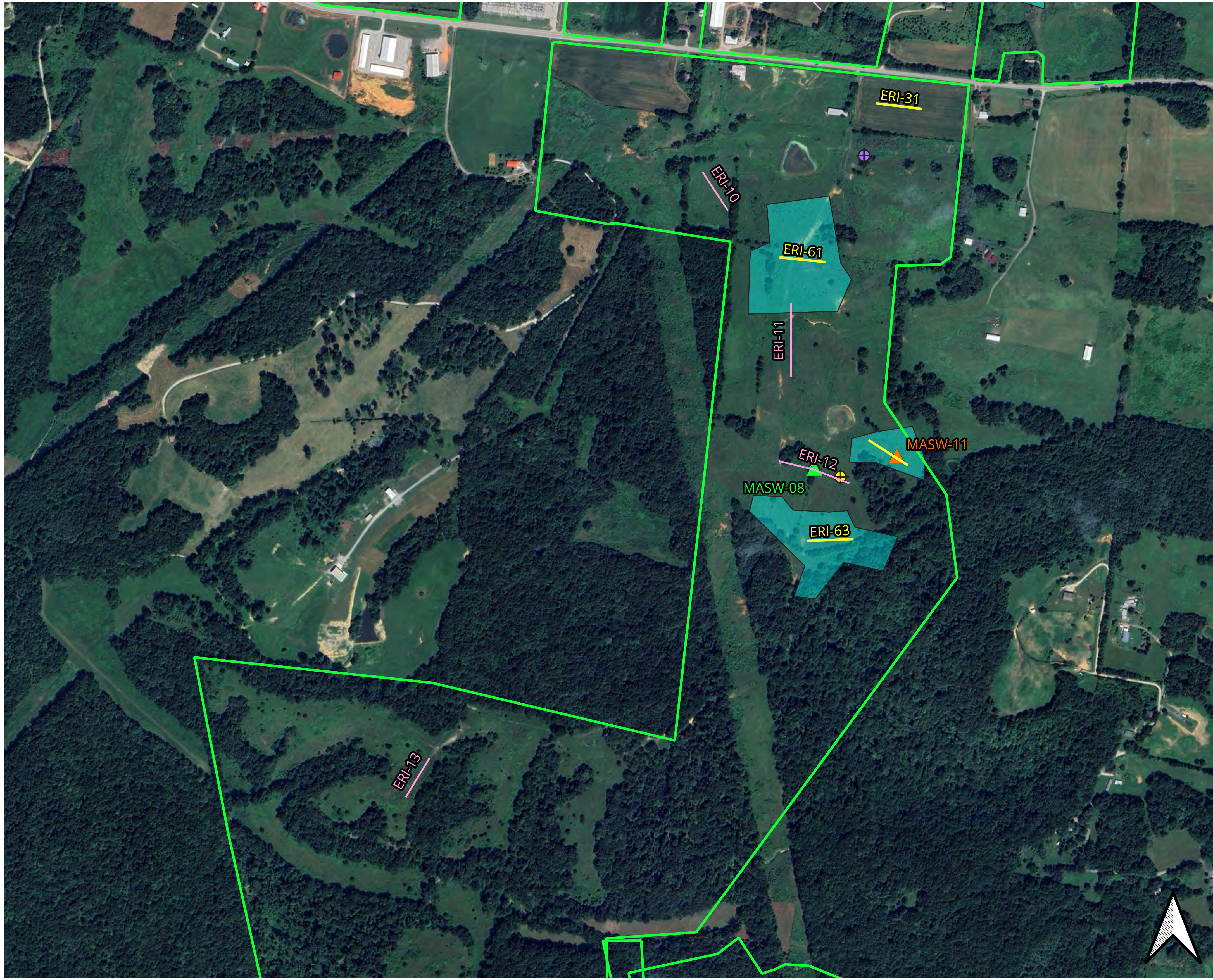
Legend

- Project Boundaries
- Constraint Areas
- As-Completed ERI Transects - Phase I
- As-Completed ERI Transects - Phase II
- As-Completed MASW Locations - Phase I
- As-Completed MASW Locations - Phase II
- Depression
- Depression
- Sinkhole
- Sinkhole
- Open Throat
- Potential Karst Feature
- Potential Karst Feature

0 500 1,000 ft

Absolute Scale: 1 inch = 500 feet
Scale at 11" x 17" AS SHOWN

Prepared by: Zachary Agnew
Date: October 7, 2024
Drawing Number: GLP-1 Rev.1



ANS GEO

Client:

Candela RENEWABLES

GEOPHYSICAL LOCATION PLAN - CENTRAL SECTION

CANDELA RENEWABLES SUMMER SHADE SOLAR PROJECT - PHASE I & II METCALFE & MONROE COUNTIES, KENTUCKY

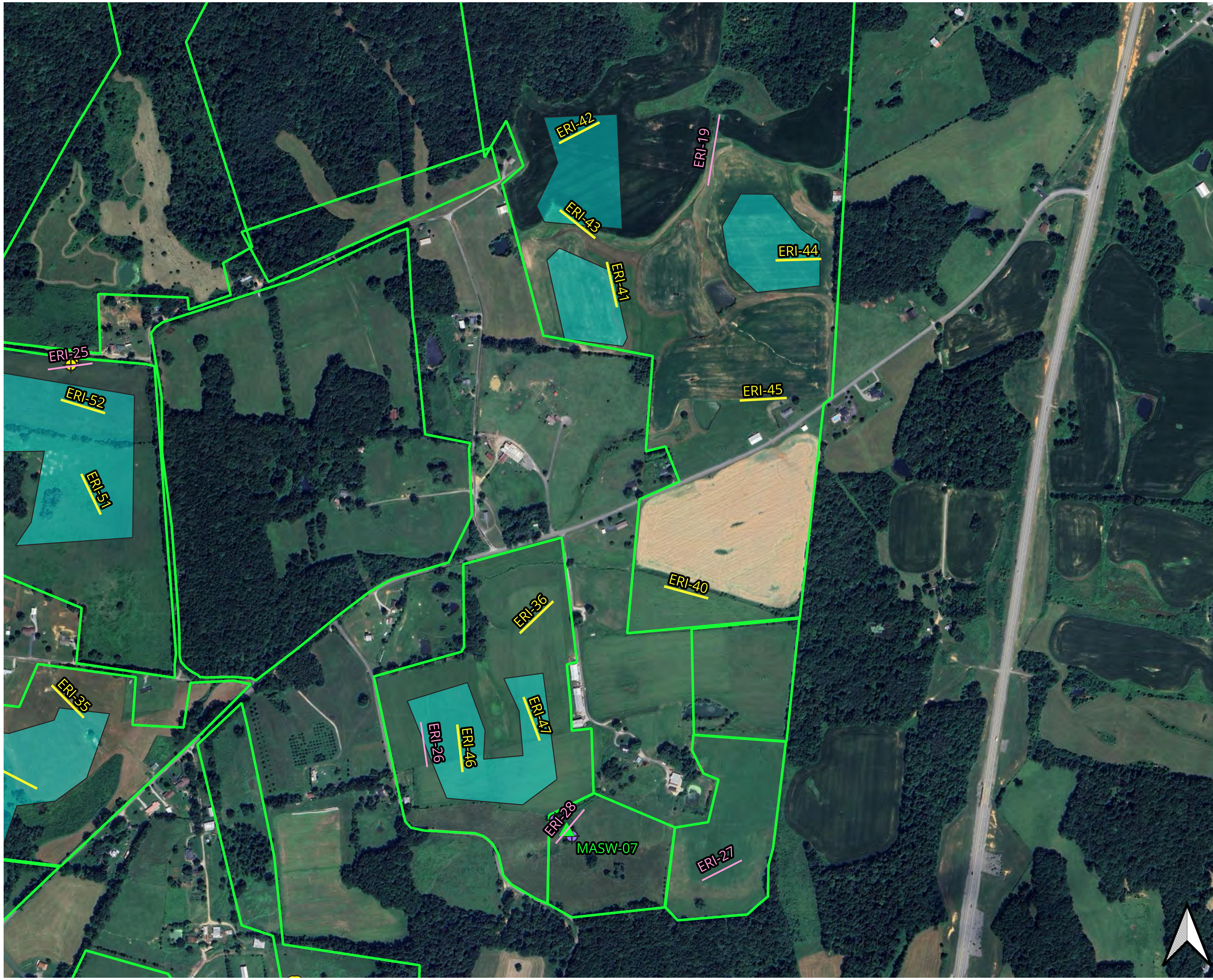
Legend

- Project Boundaries
- Constraint Areas
- As-Completed ERI Transects - Phase I
- As-Completed ERI Transects - Phase II
- As-Completed MASW Locations - Phase I
- As-Completed MASW Locations - Phase II
- Depression
- Depression
- Sinkhole
- Sinkhole
- Open Throat
- Potential Karst Feature
- Potential Karst Feature

0 500 1,000 ft

Absolute Scale: 1 inch = 500 feet
Scale at 11" x 17" AS SHOWN

Prepared by: Zachary Agnew
Date: October 2, 2024
Drawing Number: GLP-2 Rev.1



ANS GEO

Client:

Candela RENEWABLES

GEOPHYSICAL LOCATION PLAN - SOUTHEASTERN SECTION

CANDELA RENEWABLES SUMMER SHADE SOLAR PROJECT - PHASE I & II METCALFE & MONROE COUNTIES, KENTUCKY

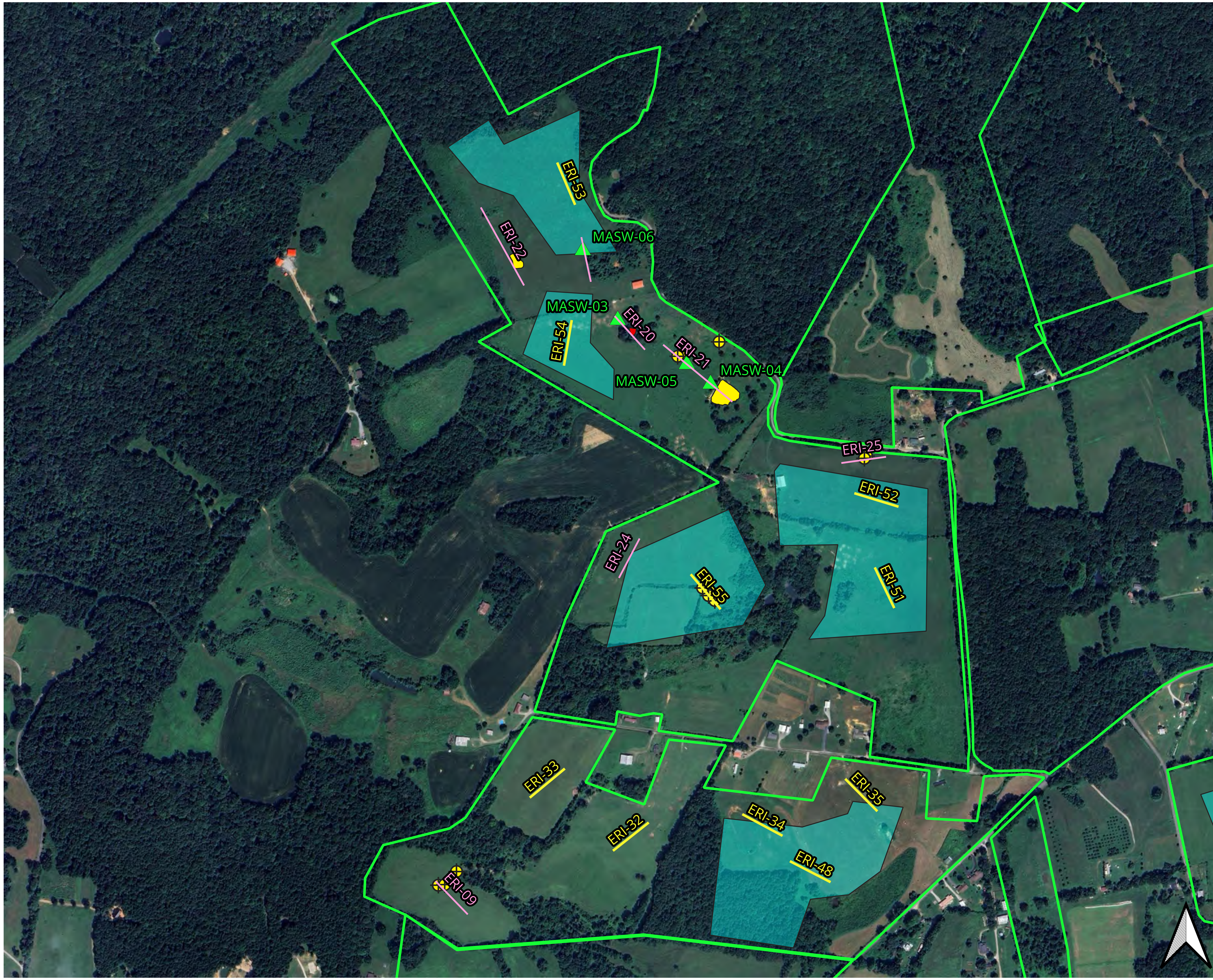
Legend

- Project Boundaries
- Constraint Areas
- As-Completed ERI Transects - Phase I
- As-Completed ERI Transects - Phase II
- As-Completed MASW Locations - Phase I
- As-Completed MASW Locations - Phase II
- Depression
- Depression
- Sinkhole
- Sinkhole
- Open Throat
- Potential Karst Feature
- Potential Karst Feature

0 750 1,500 ft

Absolute Scale: 1 inch = 750 feet
Scale at 11" x 17" AS SHOWN

Prepared by: Zachary Agnew
Date: October 7, 2024
Drawing Number: GLP-3 Rev.1



ANS GEO

Client:

Candela RENEWABLES

GEOPHYSICAL LOCATION PLAN - SOUTHWESTERN SECTION

CANDELA RENEWABLES SUMMER SHADE SOLAR PROJECT - PHASE I & II METCALFE & MONROE COUNTIES, KENTUCKY

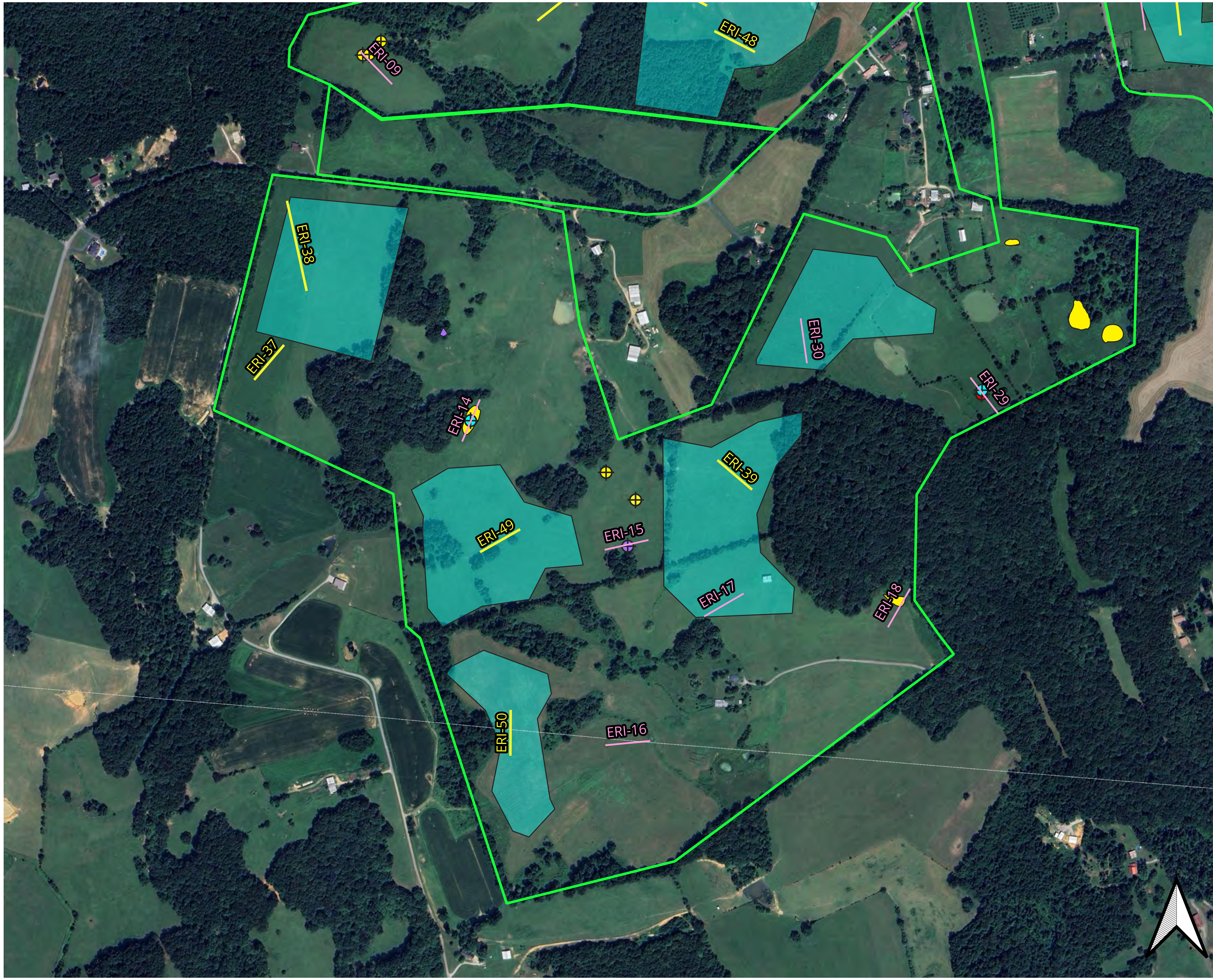
Legend

- Project Boundaries
- Constraint Areas
- As-Completed ERI Transects - Phase I
- As-Completed ERI Transects - Phase II
- As-Completed MASW Locations - Phase I
- As-Completed MASW Locations - Phase II
- Depression
- Depression
- Sinkhole
- Sinkhole
- Open Throat
- Potential Karst Feature
- Potential Karst Feature

0 750 1,500 ft

Absolute Scale: 1 inch = 750 feet
Scale at 11" x 17" AS SHOWN

Prepared by: Zachary Agnew
Date: October 7, 2024
Drawing Number: GLP-4 Rev.1



ANS GEO

Client:

Candela RENEWABLES

GEOPHYSICAL LOCATION PLAN - SOUTHERN SECTION

CANDELA RENEWABLES SUMMER SHADE SOLAR PROJECT - PHASE I & II METCALFE & MONROE COUNTIES, KENTUCKY

Legend

- Project Boundaries
- Constraint Areas
- As-Completed ERI Transects - Phase I
- As-Completed ERI Transects - Phase II
- As-Completed MASW Locations - Phase I
- As-Completed MASW Locations - Phase II
- Depression
- Depression
- Sinkhole
- Sinkhole
- Open Throat
- Potential Karst Feature
- Potential Karst Feature

0 750 1,500 ft

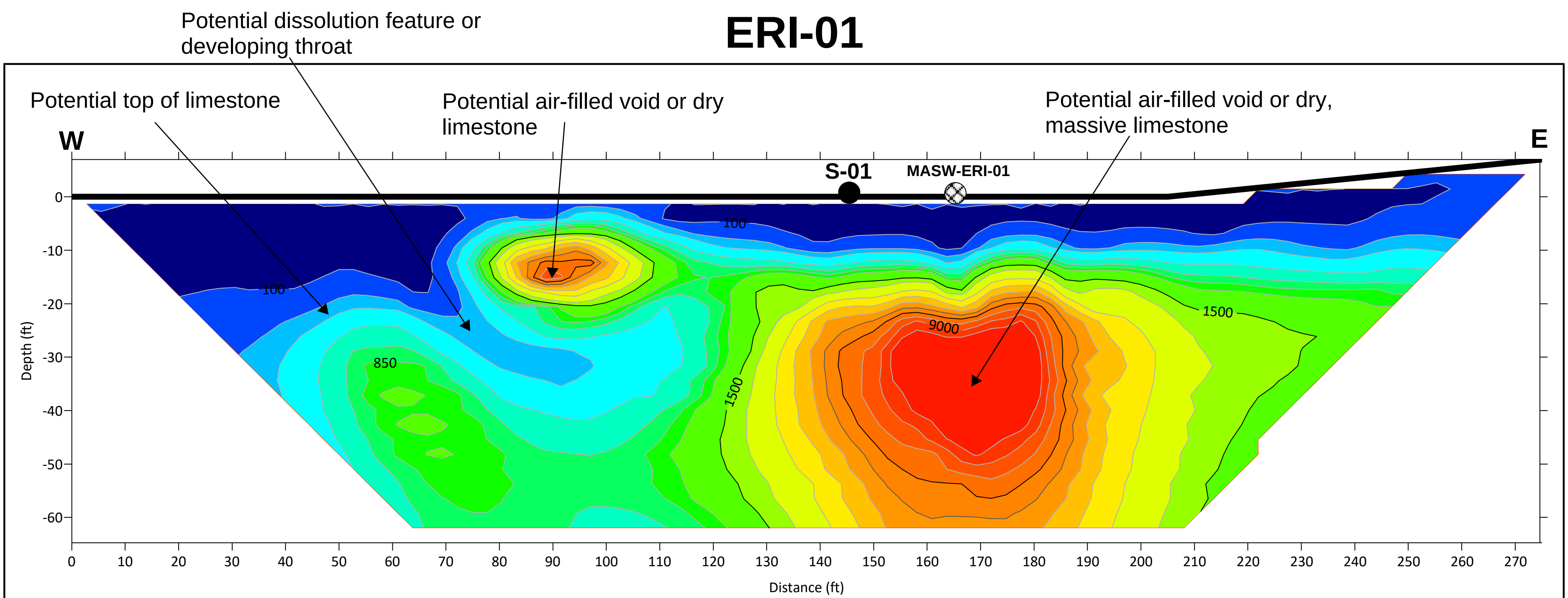
Absolute Scale: 1 inch = 750 feet
Scale at 11" x 17" AS SHOWN

Prepared by: Zachary Agnew
Date: October 7, 2024
Drawing Number: GLP-5 Rev.1

Attachment C-1

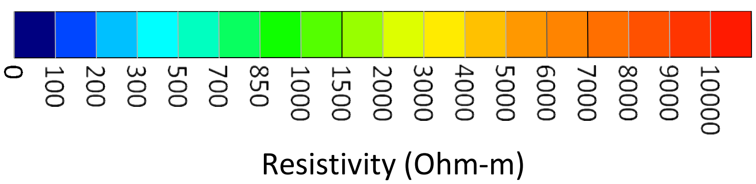
Electrical Resistivity Imaging (ERI) Profiles – Phase I

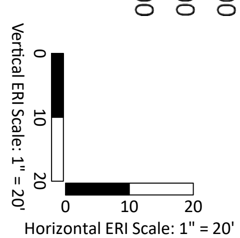
ERI-01



LEGEND

- ● OBSERVED KARST FEATURE
- ⊗ COMPLETED MASW TEST





NOTES: Geophysical data was acquired on June 8, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 5-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

SCALE:

SOURCE: AGI EarthImager

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

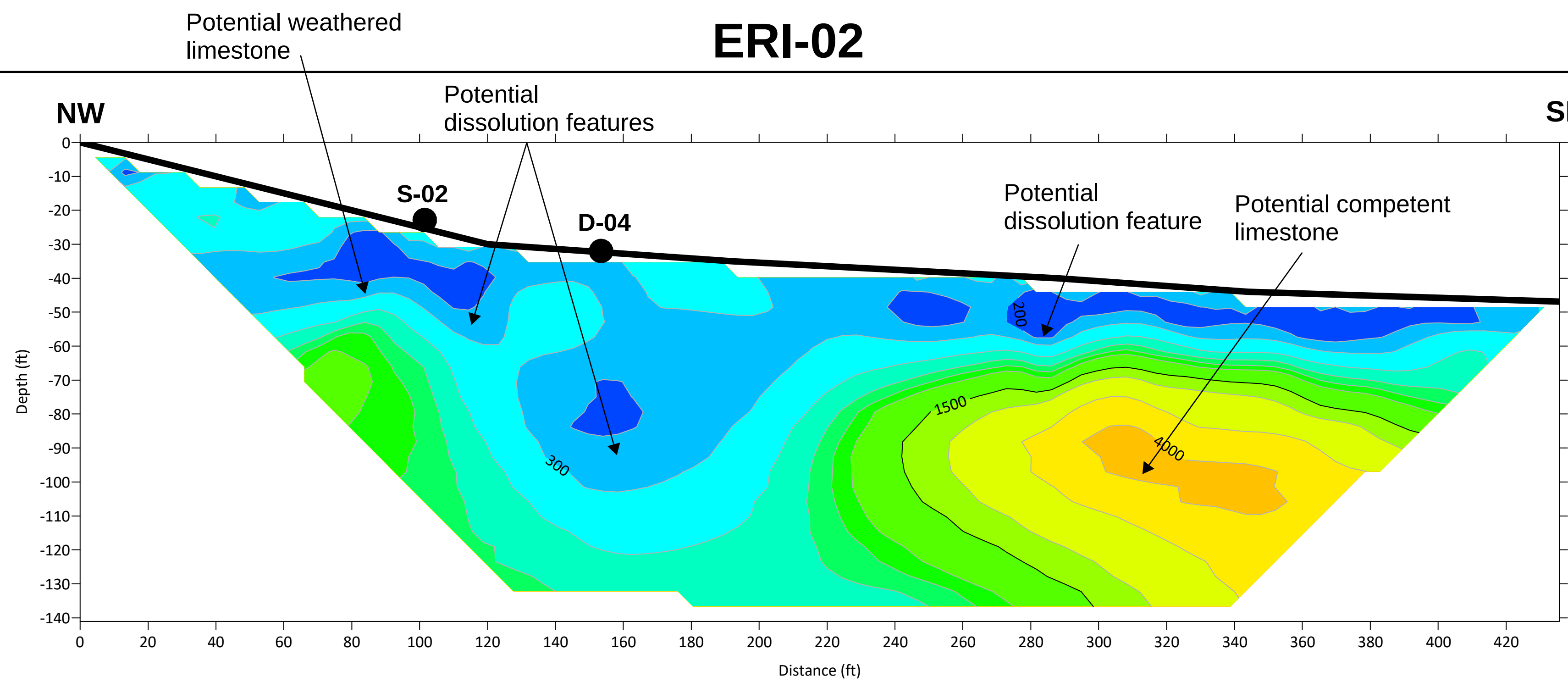
ATTACHMENT TITLE:
Electrical Resistivity Imaging Profiles (ERI-1)

PREPARED FOR: Candela

PROJECT NO.

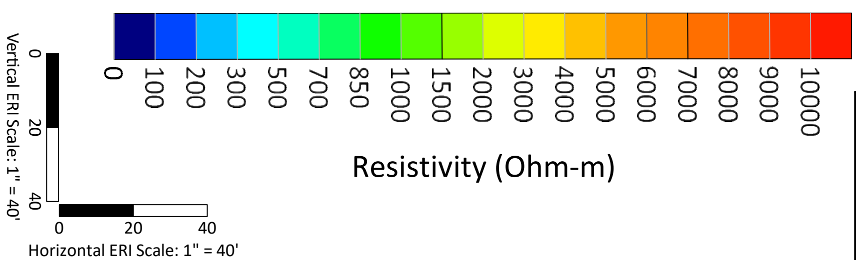
SHEET NO. **1 OF 30**

ERI-02



LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



NOTES: Geophysical data acquired on June 7, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 5-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/18/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

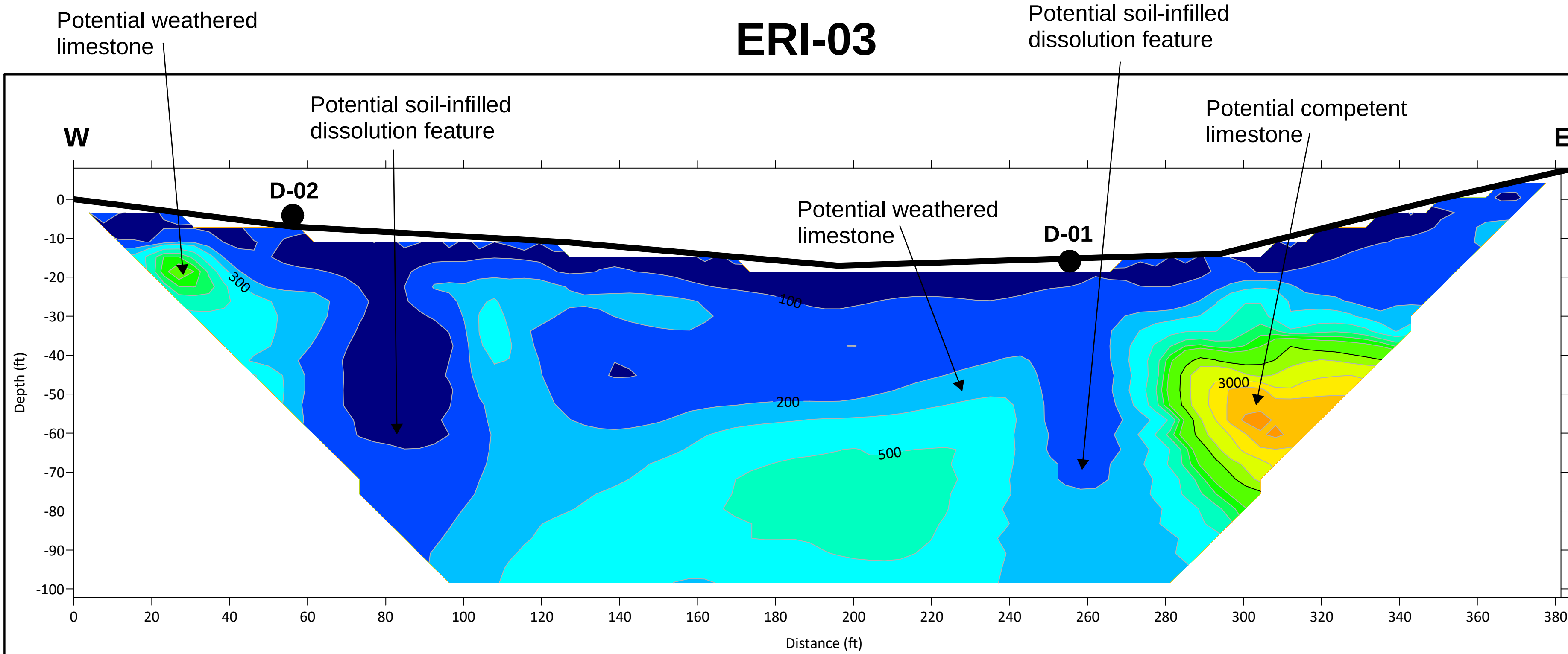
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-2)

PREPARED FOR
Candela

PROJECT NO.

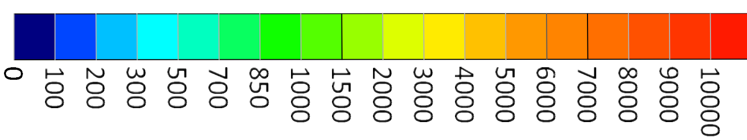
SHEET NO.
2 OF 30

ERI-03

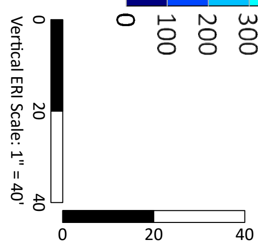


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



Resistivity (Ohm-m)



Horizontal ERI Scale: 1" = 40'

NOTES: Geophysical data acquired on June 7, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 7-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/18/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

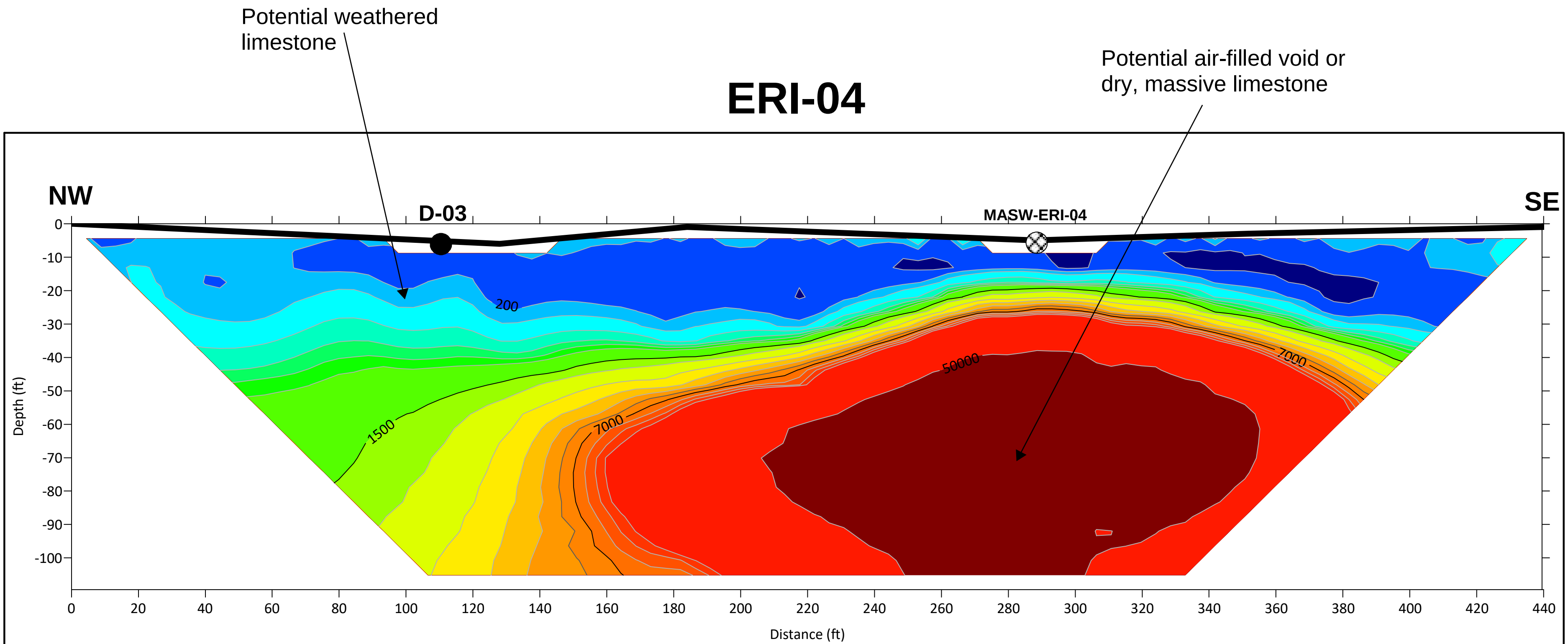
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-3)

PREPARED FOR
Candela

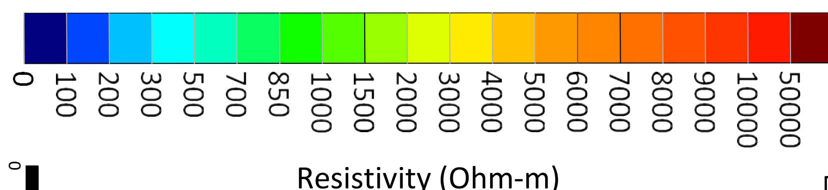
PROJECT NO.

SHEET NO.
3 OF 30

ERI-04



LEGEND
- ● OBSERVED KARST FEATURE
- ⊗ COMPLETED MASW TEST



Vertical ERI Scale: 1" = 40' (0, 20, 40)

Horizontal ERI Scale: 1" = 40' (0, 20, 40)

NOTES: Geophysical data acquired on June 8, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 8-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/19/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT: **Geophysical Investigation Summer Shade Solar Project Metcalfe & Monroe Counties, Kentucky**

SCALE:

SOURCE: AGI EarthImager

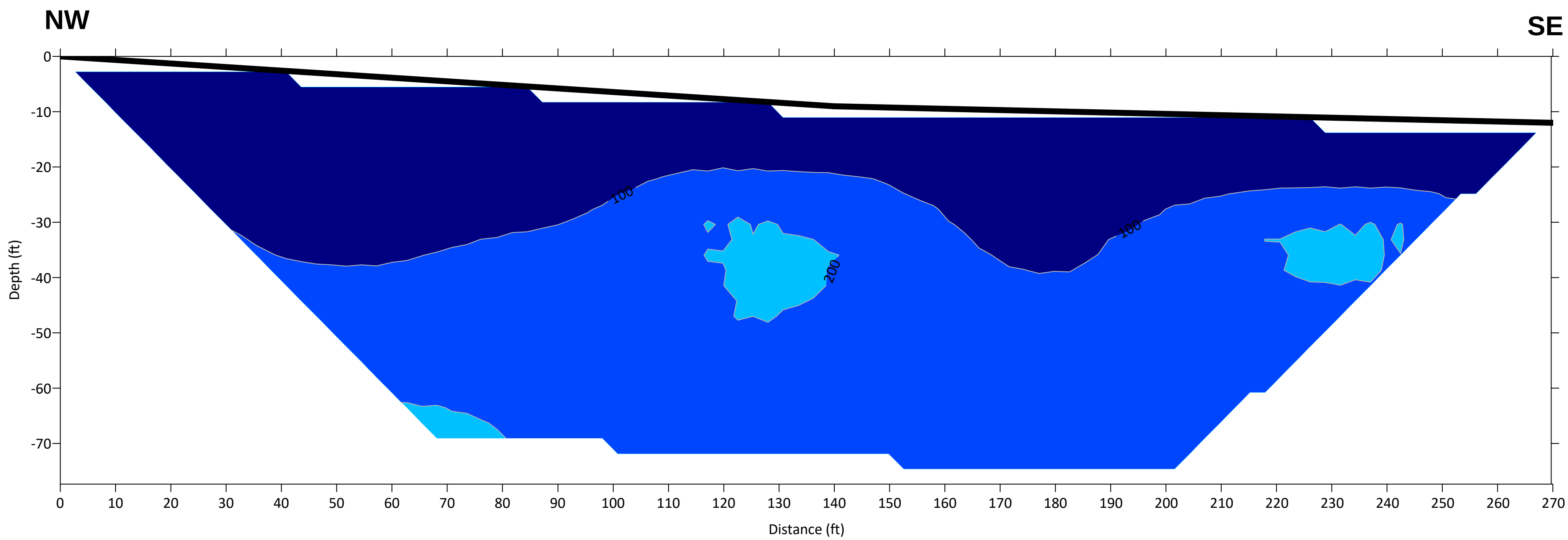
ATTACHMENT TITLE: **Electrical Resistivity Imaging Profile (ERI-4)**

PREPARED FOR: Candela

PROJECT NO.

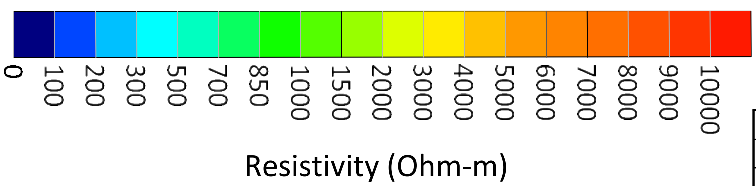
SHEET NO. **4 OF 30**

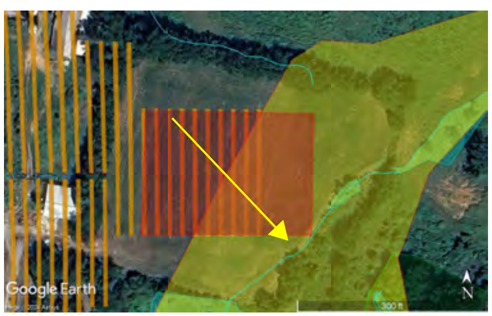
ERI-05

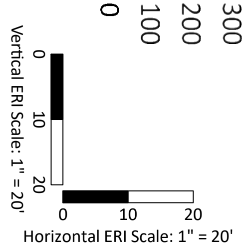


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data acquired on June 8, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/18/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

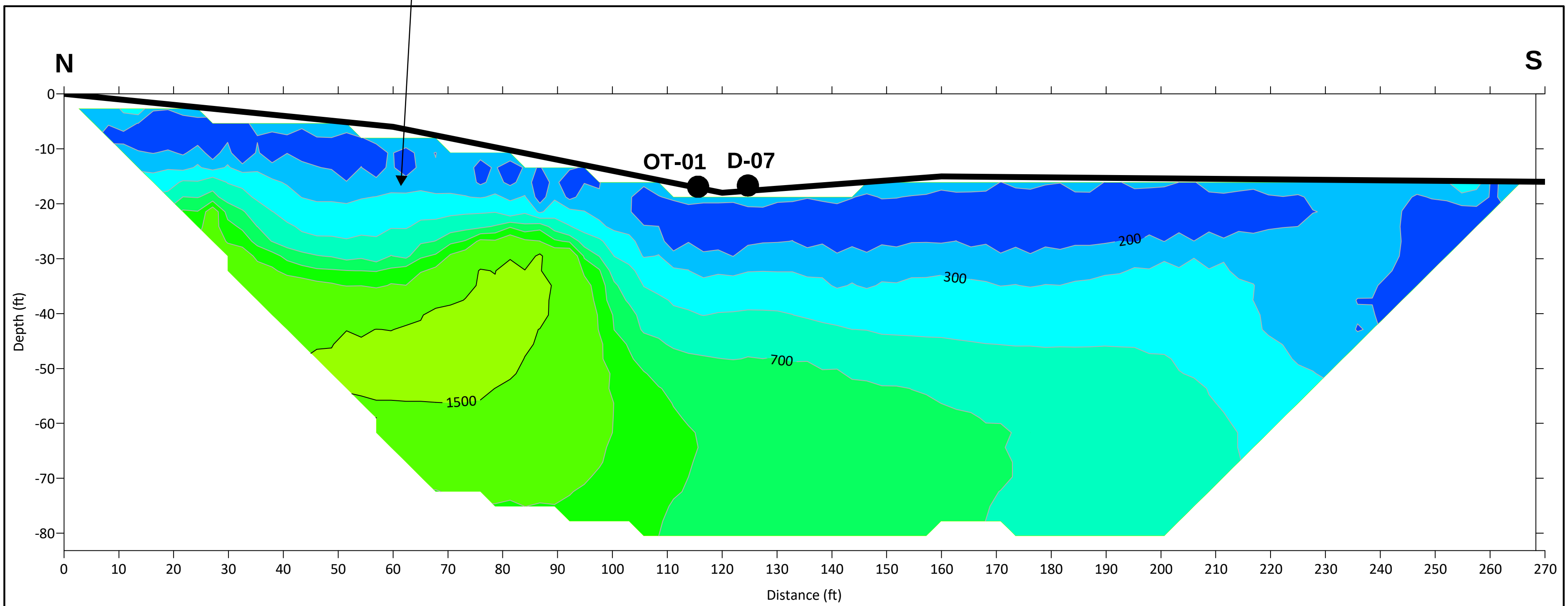
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-5)

PREPARED FOR
Candela

PROJECT NO.

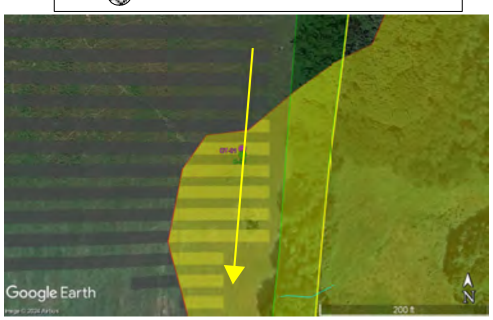
SHEET NO.
5 OF 30

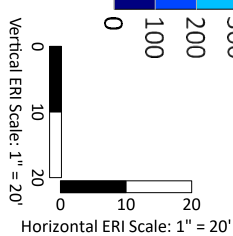
ERI-06

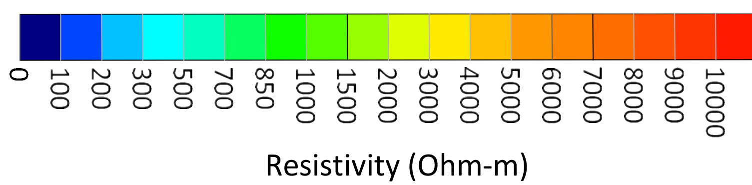


LEGEND

- ● OBSERVED KARST FEATURE
- ⊗ COMPLETED MASW TEST







NOTES: Geophysical data acquired on June 8, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/18/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

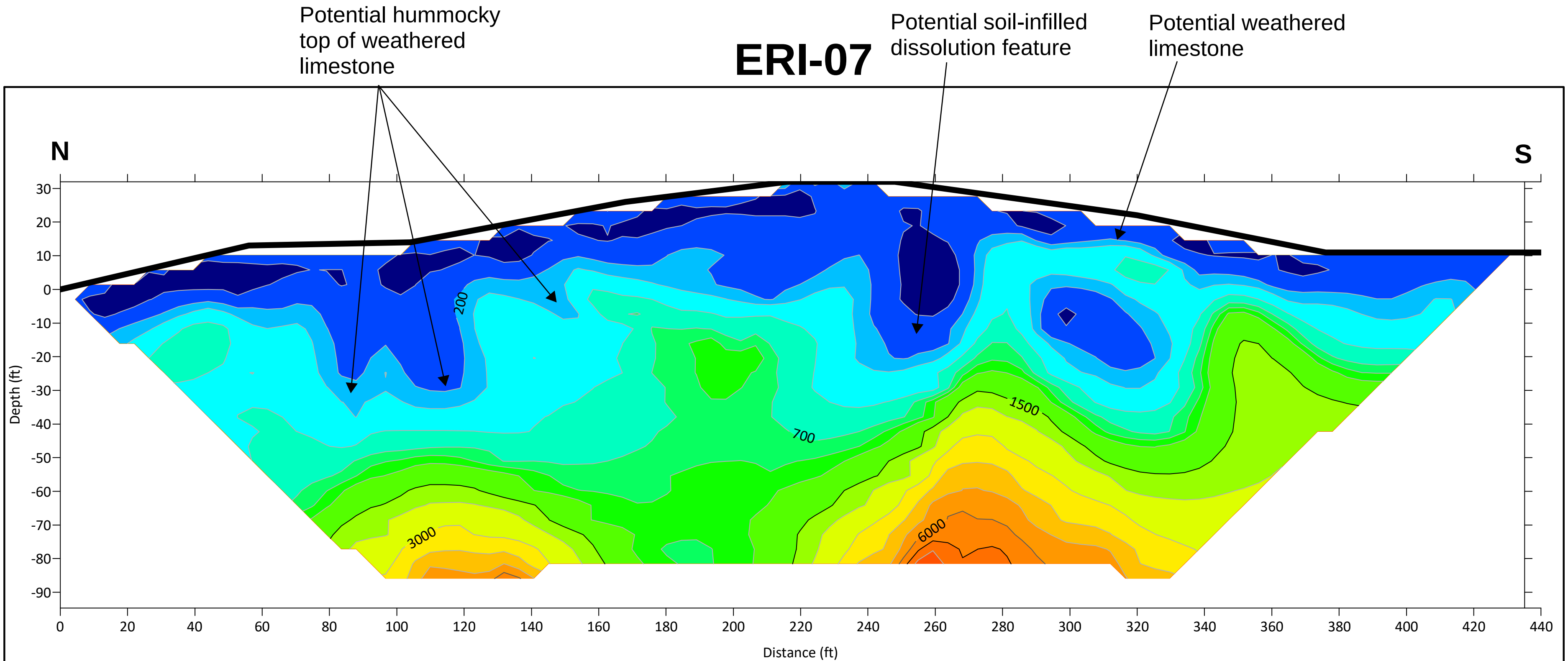
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-6)

PREPARED FOR
Candela

PROJECT NO.

SHEET NO.
6 OF 30

ERI-07



LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST

Vertical ERI Scale: 1" = 40'

Resistivity (Ohm-m)

0 20 40

Horizontal ERI Scale: 1" = 40'

NOTES: Geophysical data acquired on June 8, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 8-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/18/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

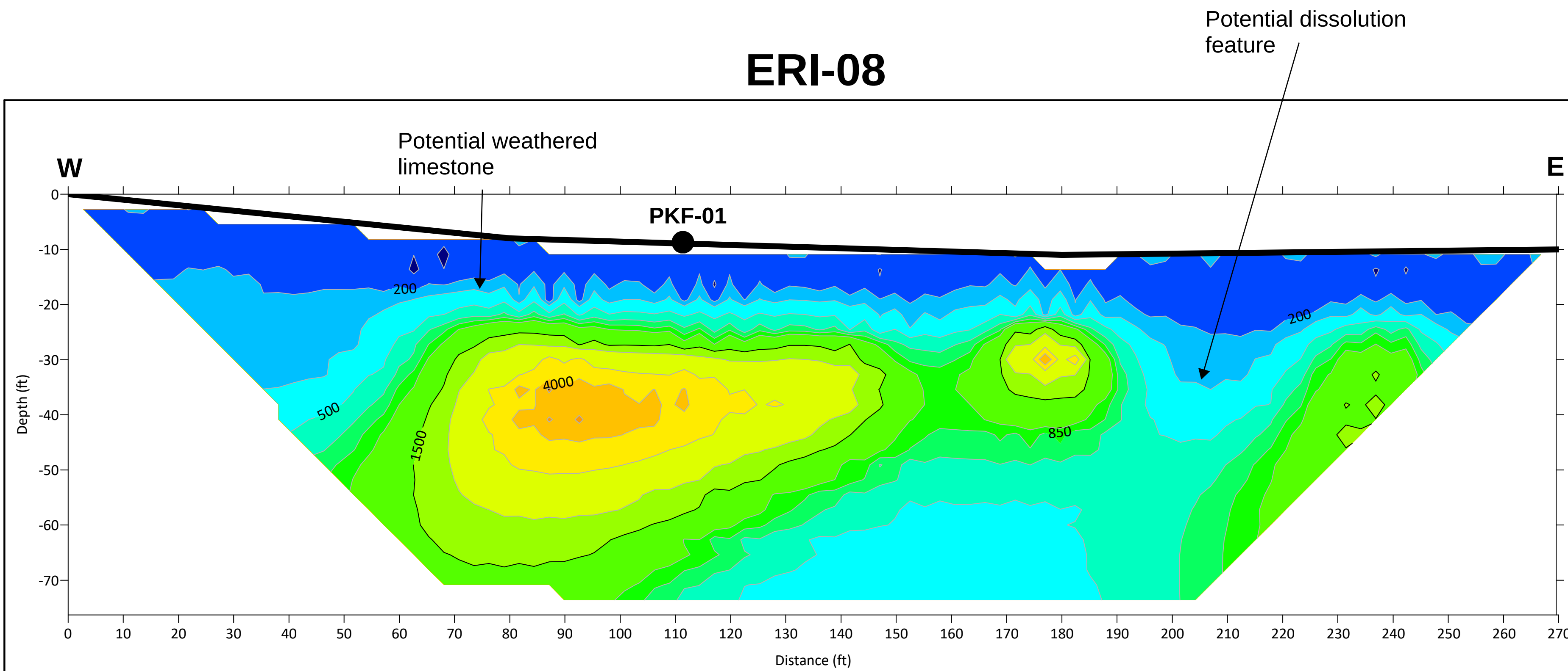
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-7)

PREPARED FOR
Candela

PROJECT NO.

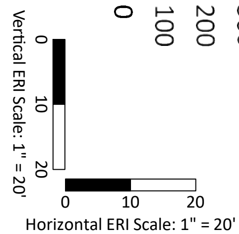
SHEET NO.
7 OF 30

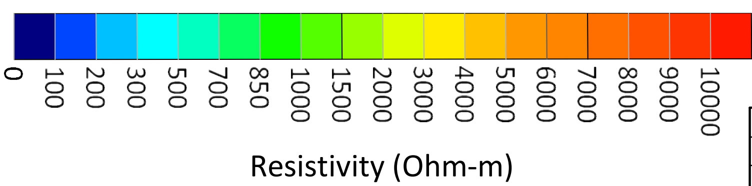
ERI-08



LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST





NOTES: Geophysical data acquired on June 8, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/18/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

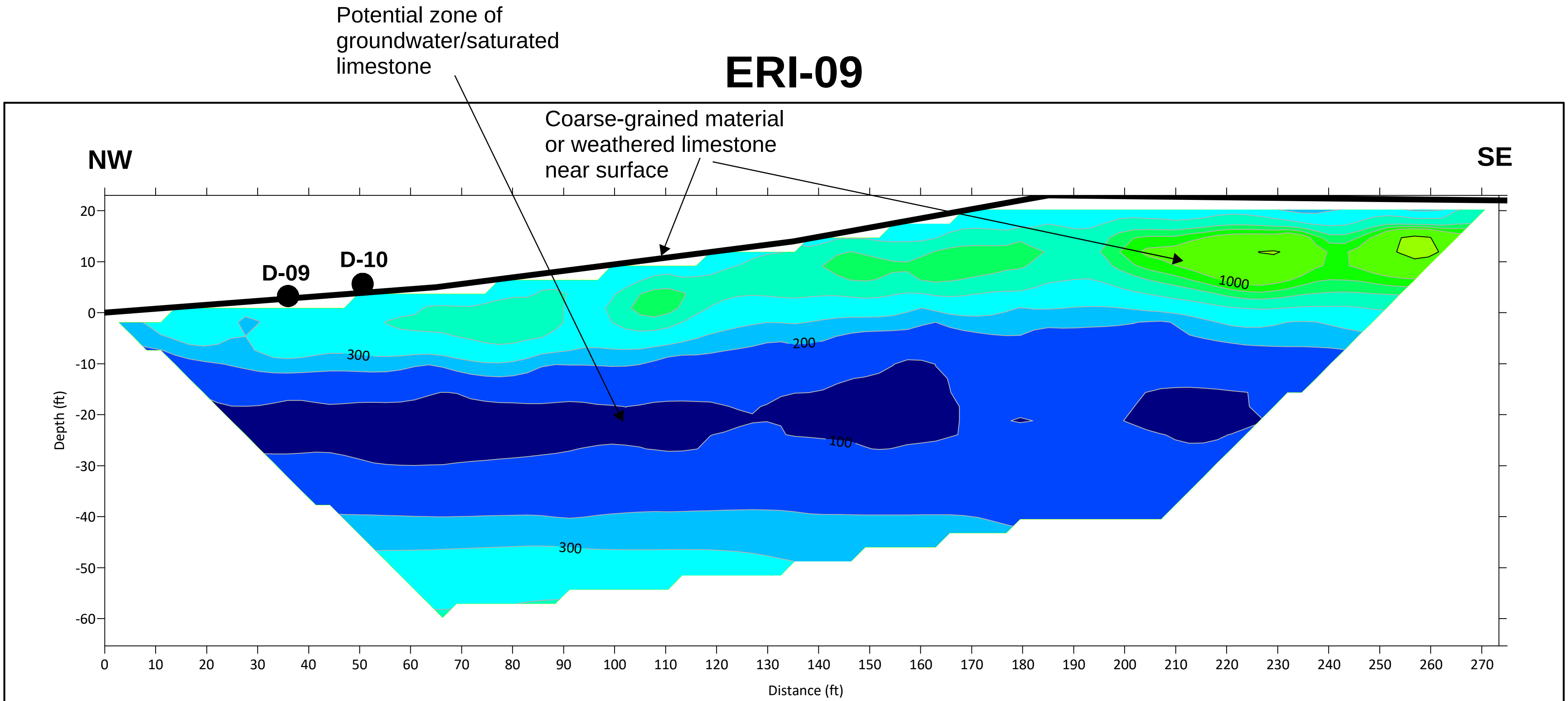
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-8)

PREPARED FOR
Candela

PROJECT NO.

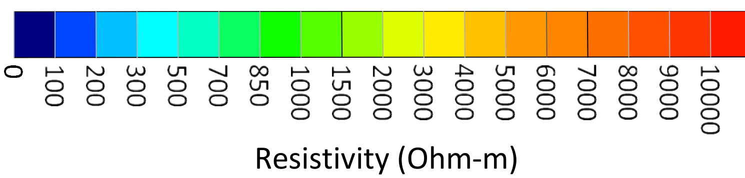
SHEET NO.
8 OF 30

ERI-09



LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



Vertical ERI Scale: 1" = 20' (0, 10, 20)

Horizontal ERI Scale: 1" = 20' (0, 10, 20)

NOTES: Geophysical data acquired on June 9, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 5-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/18/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE: AGI EarthImager

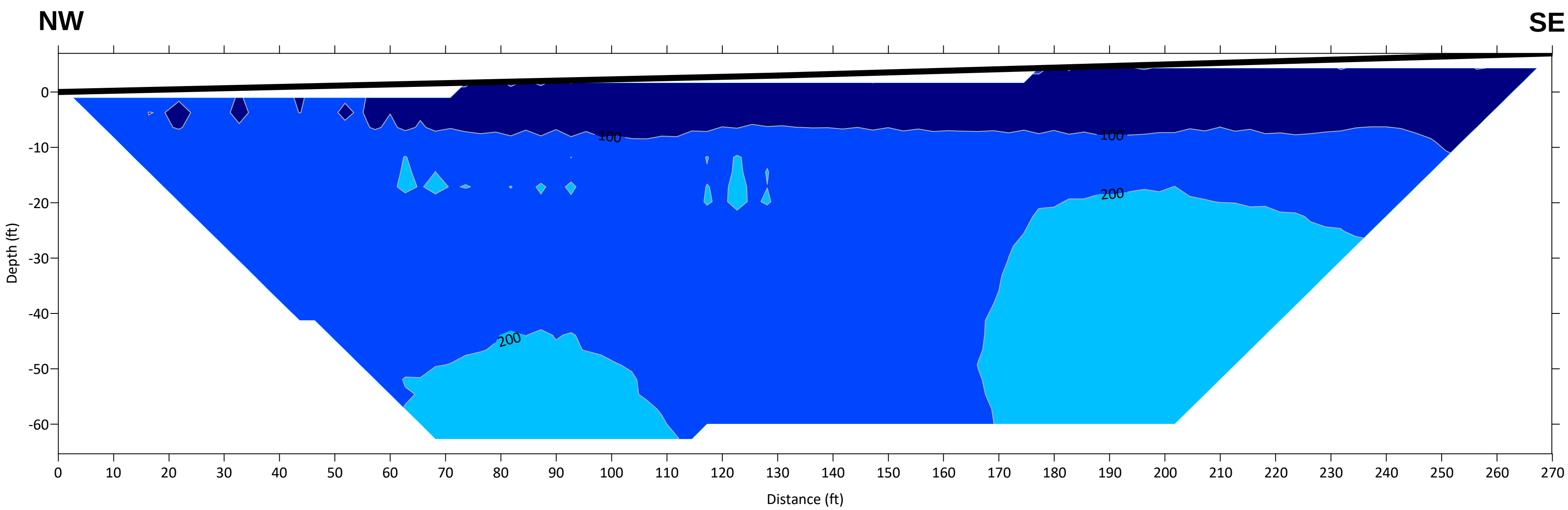
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-9)

PREPARED FOR: Candela

PROJECT NO.

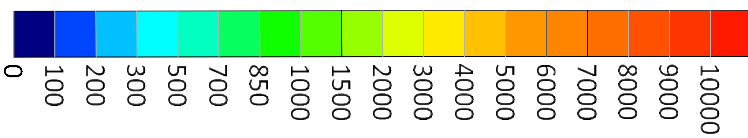
SHEET NO. **9 OF 30**

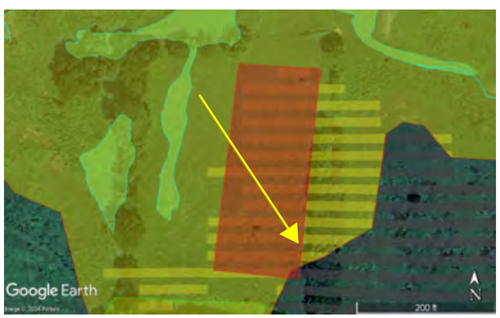
ERI-10

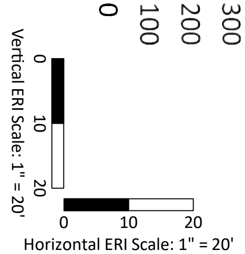


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data acquired on June 10, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 5-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/18/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

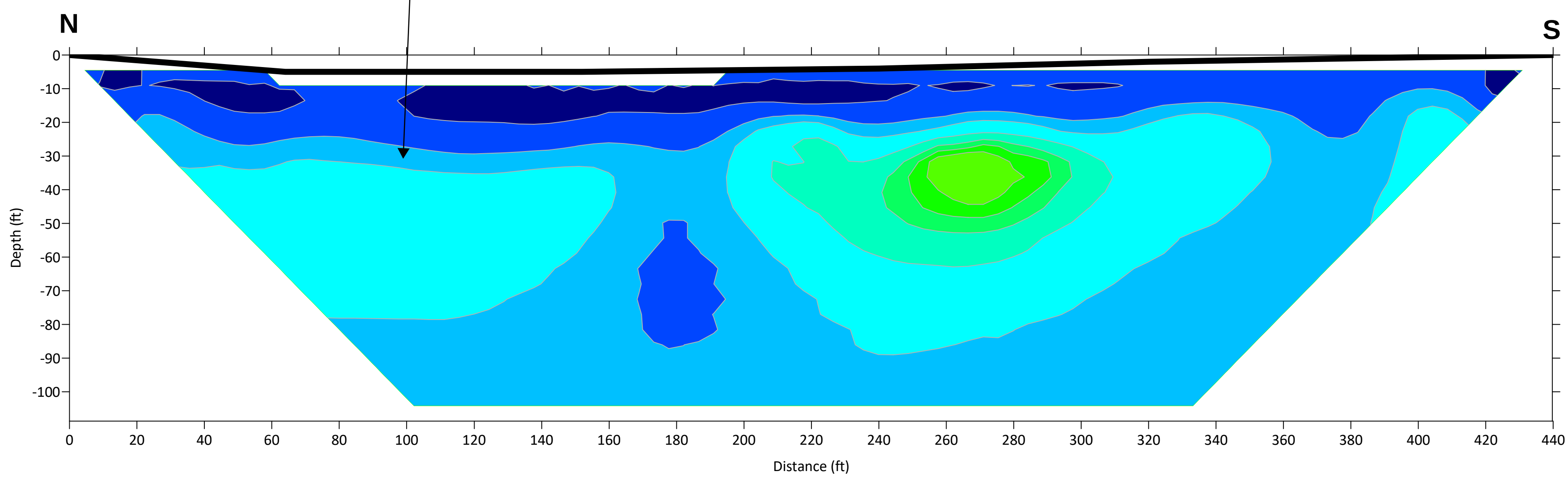
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile
(ERI-10)

PREPARED FOR
Candela

PROJECT NO.

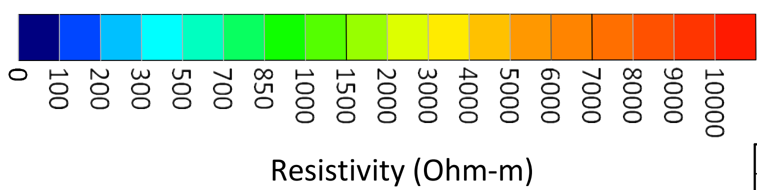
SHEET NO.
10 OF 30

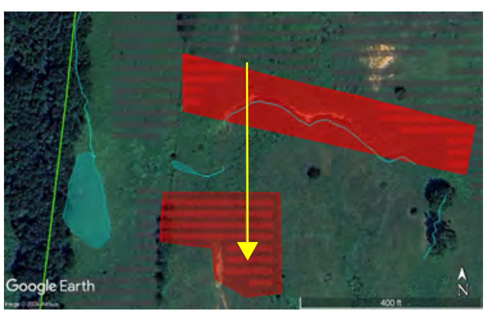
ERI-11

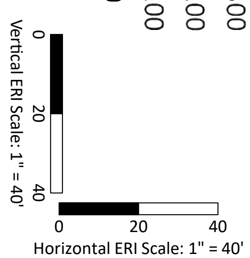


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data acquired on June 10, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 8-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/18/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

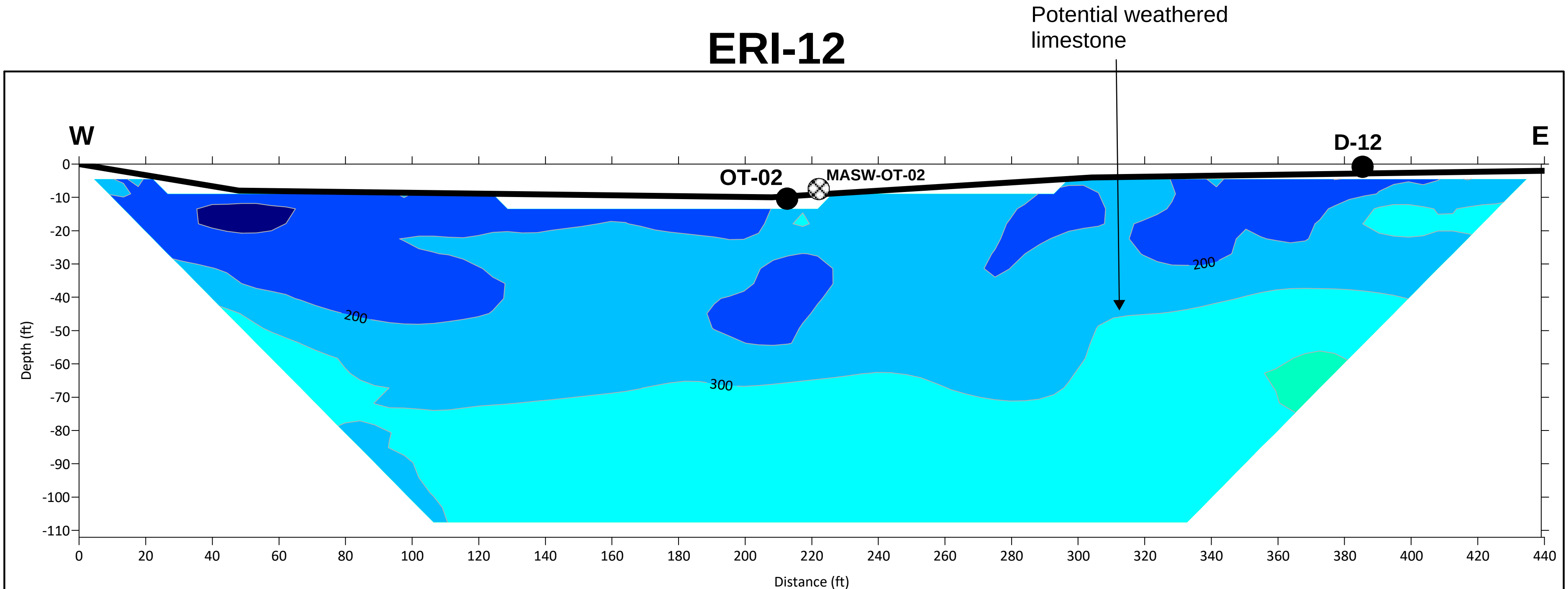
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-11)

PREPARED FOR
Candela

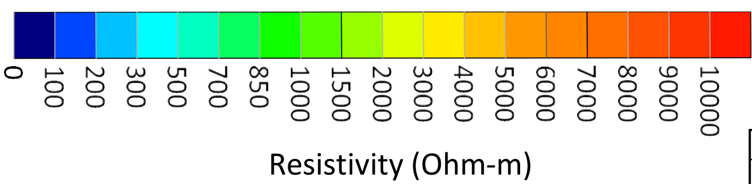
PROJECT NO.

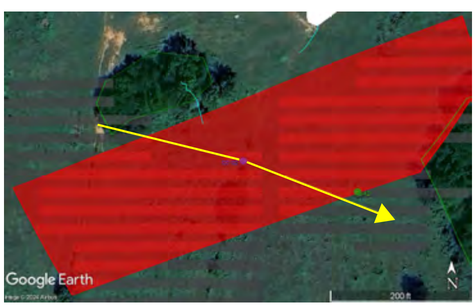
SHEET NO.
11 OF 30

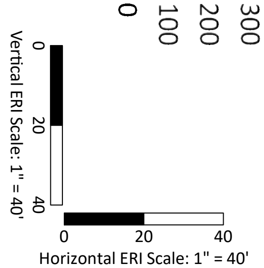
ERI-12



LEGEND
- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data acquired on June 10, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 8-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE: AGI EarthImager

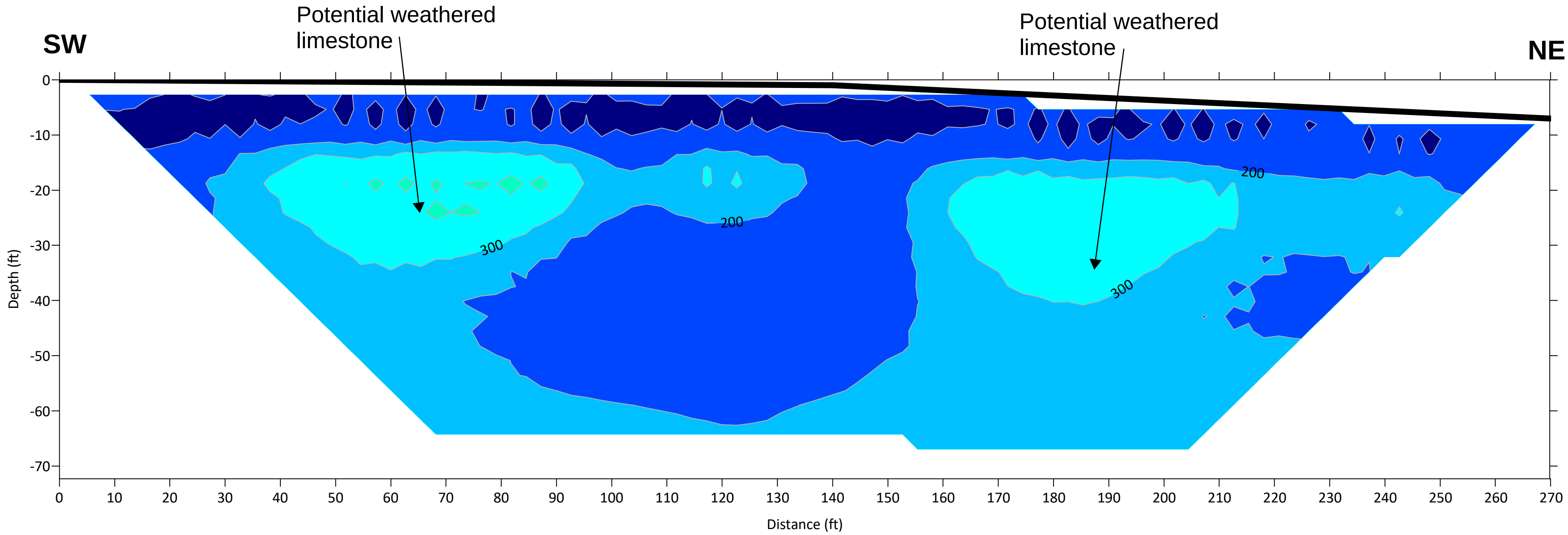
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-12)

PREPARED FOR: Candela

PROJECT NO.

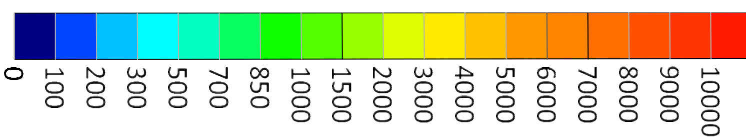
SHEET NO. **12 OF 30**

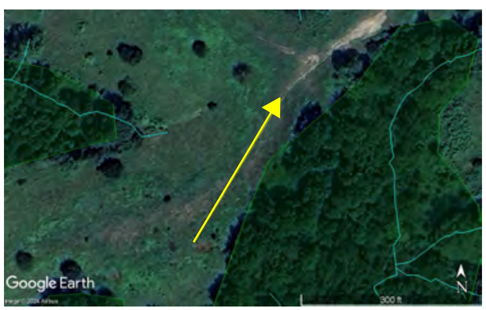
ERI-13



LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST





Vertical ERI Scale: 1" = 20' (0, 10, 20)

Horizontal ERI Scale: 1" = 20' (0, 10, 20)

NOTES: Geophysical data acquired on June 10, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE: AGI EarthImager

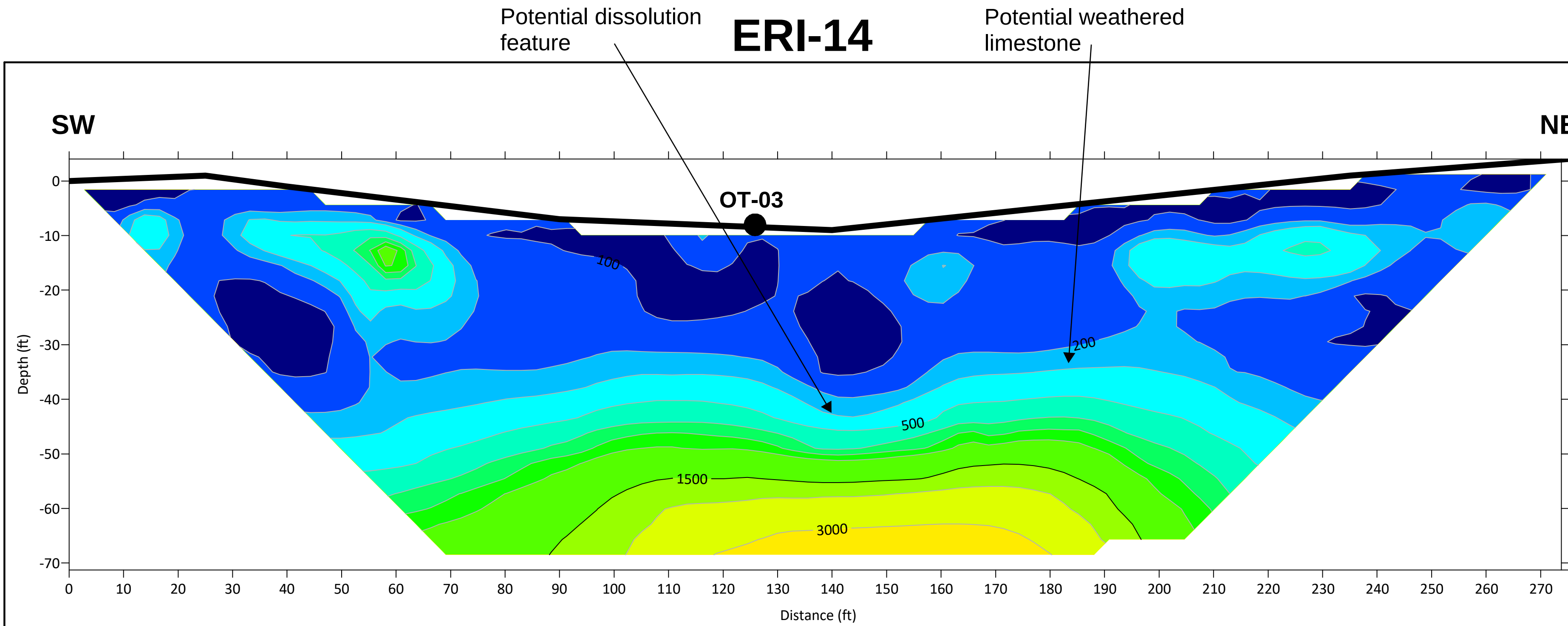
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-13)

PREPARED FOR: Candela

PROJECT NO.

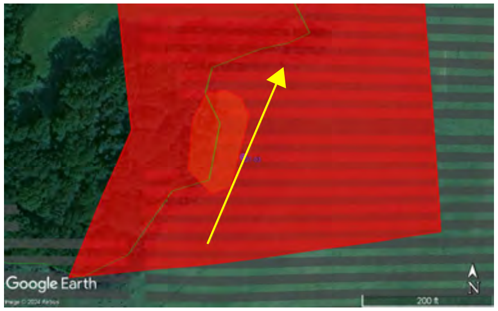
SHEET NO. **13 OF 30**

ERI-14



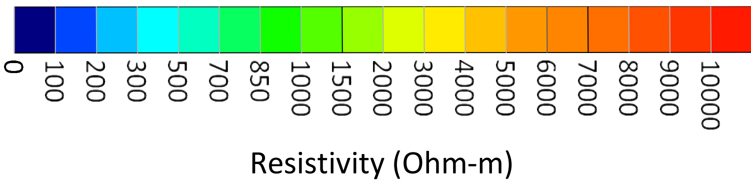
LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



Vertical ERI Scale: 1" = 20'
0 10 20

0 10 20
Horizontal ERI Scale: 1" = 20'



NOTES: Geophysical data acquired on June 10, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 5-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

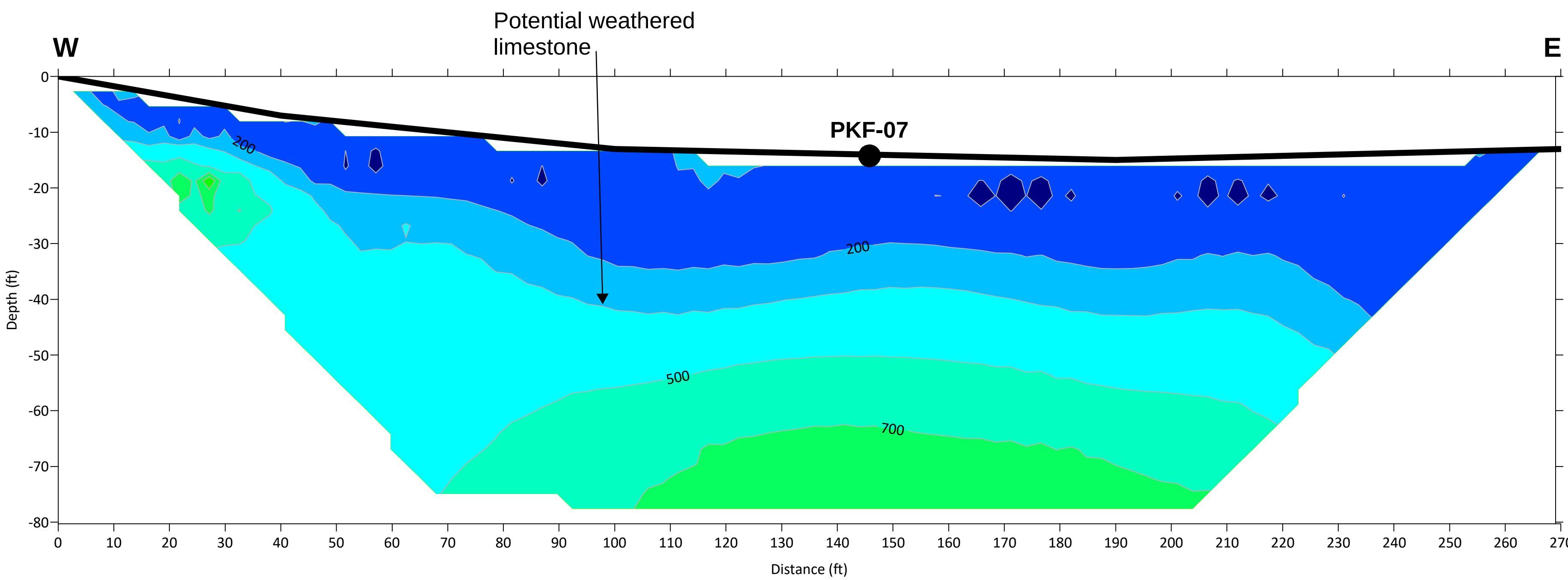
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-14)

PREPARED FOR
Candela

PROJECT NO.

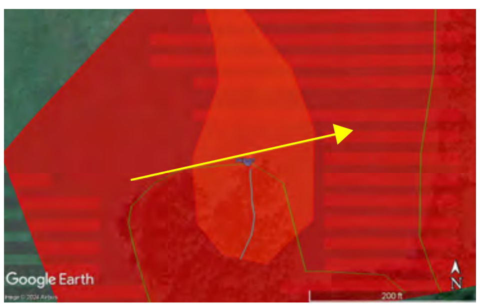
SHEET NO.
14 OF 30

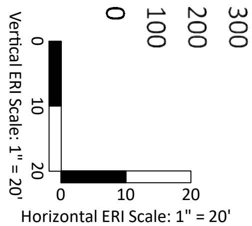
ERI-15

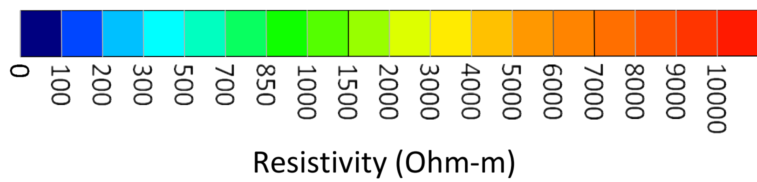


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data acquired on June 11, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE: AGI EarthImager

ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-15)

PREPARED FOR: Candela

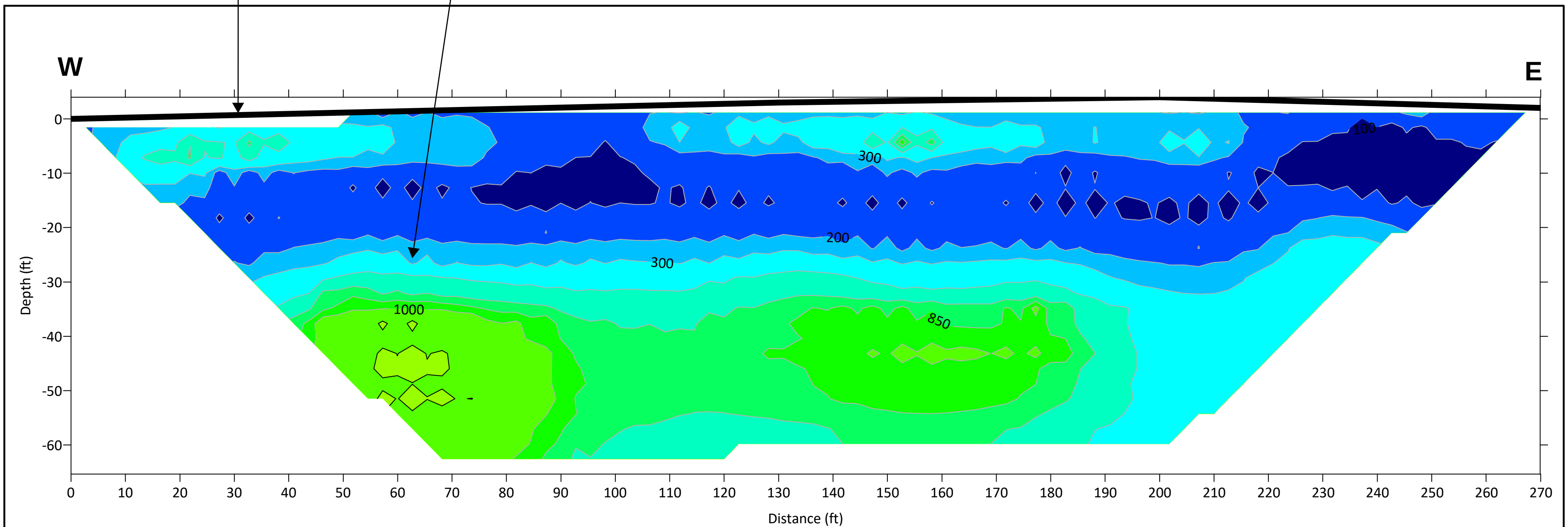
PROJECT NO.

SHEET NO. **15 OF 30**

Dryer and/or coarser-grained soils

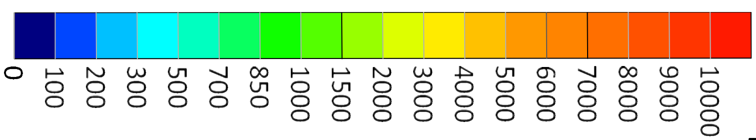
Potential weathered limestone

ERI-16

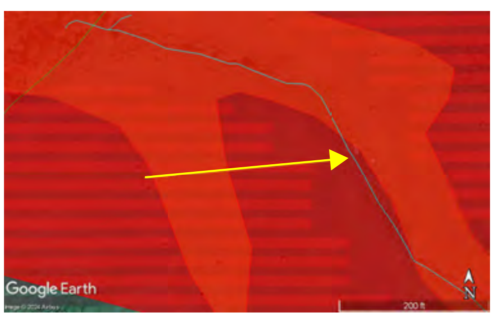


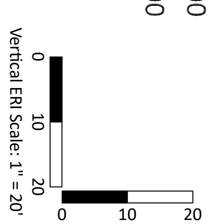
LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



Resistivity (Ohm-m)





Horizontal ERI Scale: 1" = 20'

NOTES: Geophysical data acquired on June 11, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

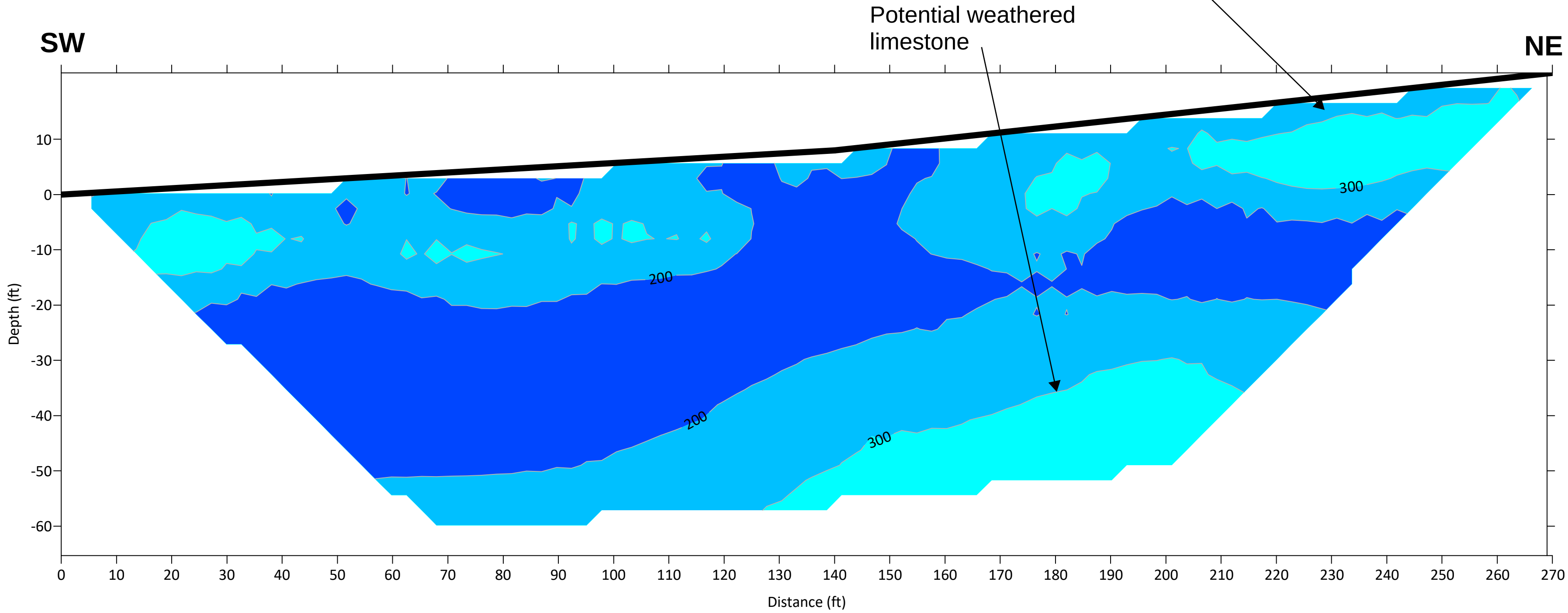
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-16)

PREPARED FOR
Candela

PROJECT NO.

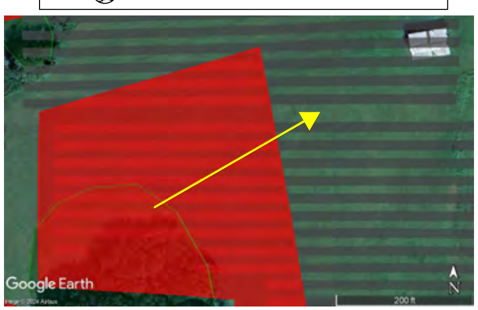
SHEET NO.
16 OF 30

ERI-17



LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



Resistivity (Ohm-m): 0, 100, 200, 300, 500, 700, 850, 1000, 1500, 2000, 3000, 4000, 5000, 6000, 7000, 8000, 9000, 10000

Vertical ERI Scale: 1" = 20' (0, 10, 20)

Horizontal ERI Scale: 1" = 20' (0, 10, 20)

NOTES: Geophysical data acquired on June 11, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

PROJECT: **Geophysical Investigation Summer Shade Solar Project Metcalfe & Monroe Counties, Kentucky**

SCALE:

SOURCE: AGI EarthImager

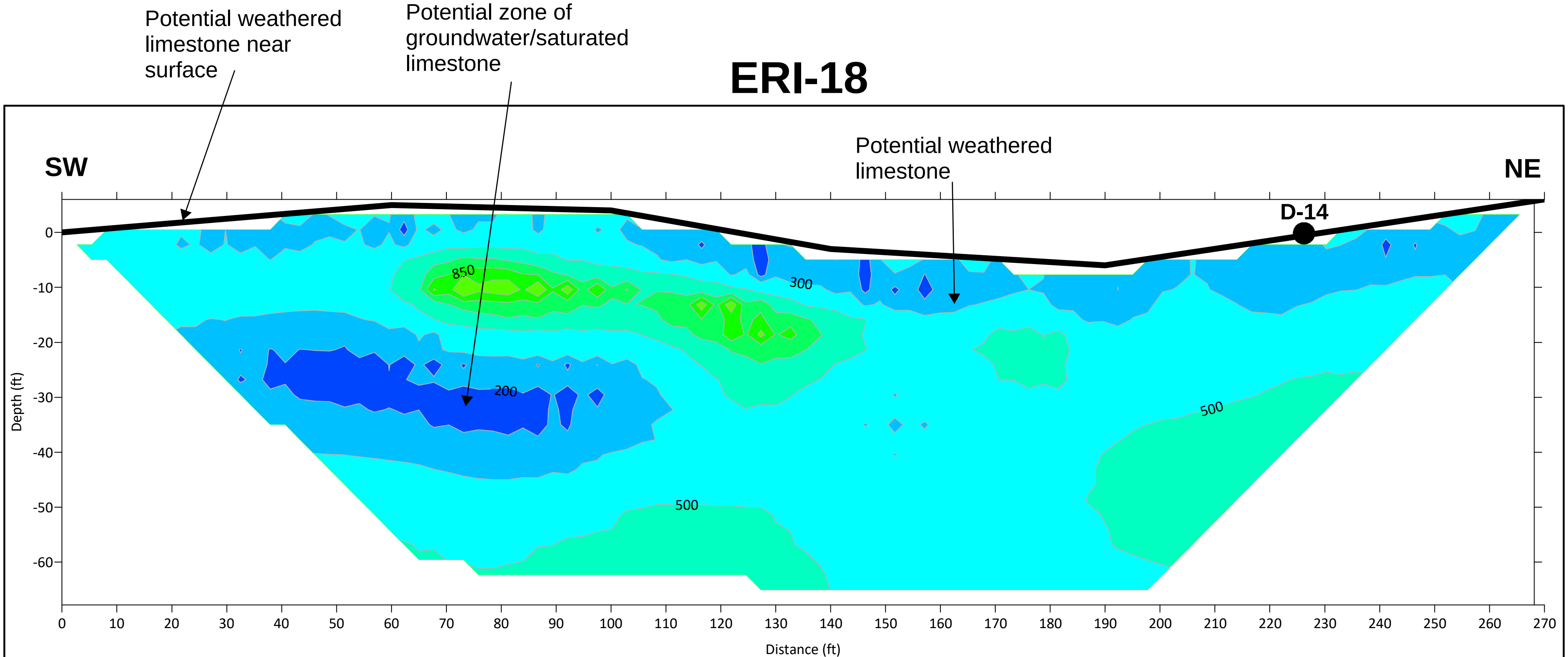
ATTACHMENT TITLE: **Electrical Resistivity Imaging Profile (ERI-17)**

PREPARED FOR: Candela

PROJECT NO.

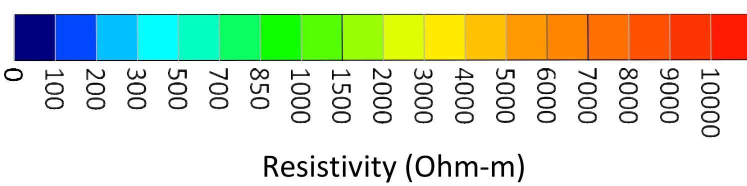
SHEET NO. **17 OF 30**

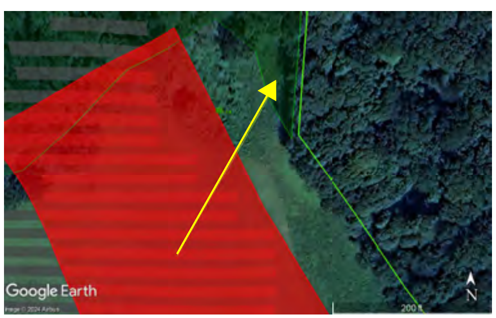
ERI-18

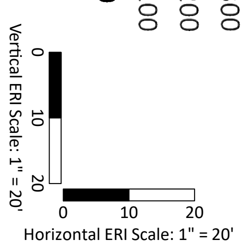


LEGEND

- ● OBSERVED KARST FEATURE
- ⊗ COMPLETED MASW TEST







NOTES: Geophysical data acquired on June 11, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO — 4405 S Clinton Ave, South Plainfield, NJ 07080, (908) 754-8800, www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT: **Geophysical Investigation Summer Shade Solar Project Metcalfe & Monroe Counties, Kentucky**

SCALE:

SOURCE: AGI EarthImager

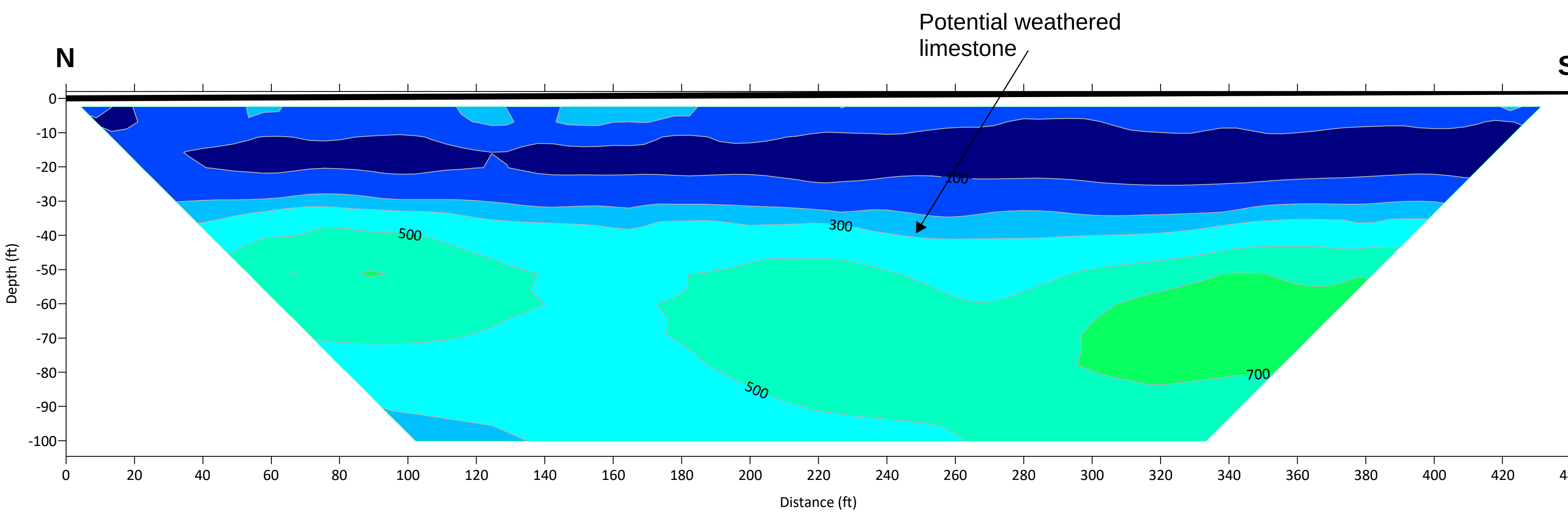
ATTACHMENT TITLE: **Electrical Resistivity Imaging Profile (ERI-18)**

PREPARED FOR: Candela

PROJECT NO.

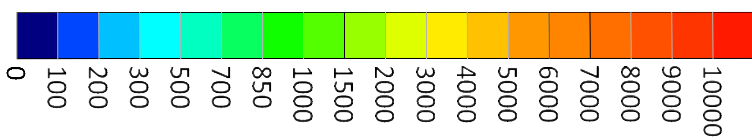
SHEET NO. **18 OF 30**

ERI-19

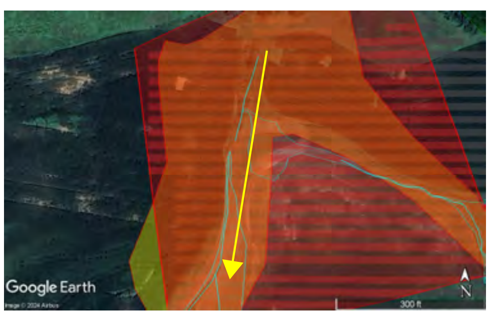


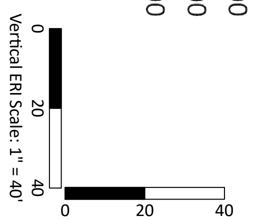
LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



Resistivity (Ohm-m)





Horizontal ERI Scale: 1" = 40'

NOTES: Geophysical data acquired on June 11, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 8-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

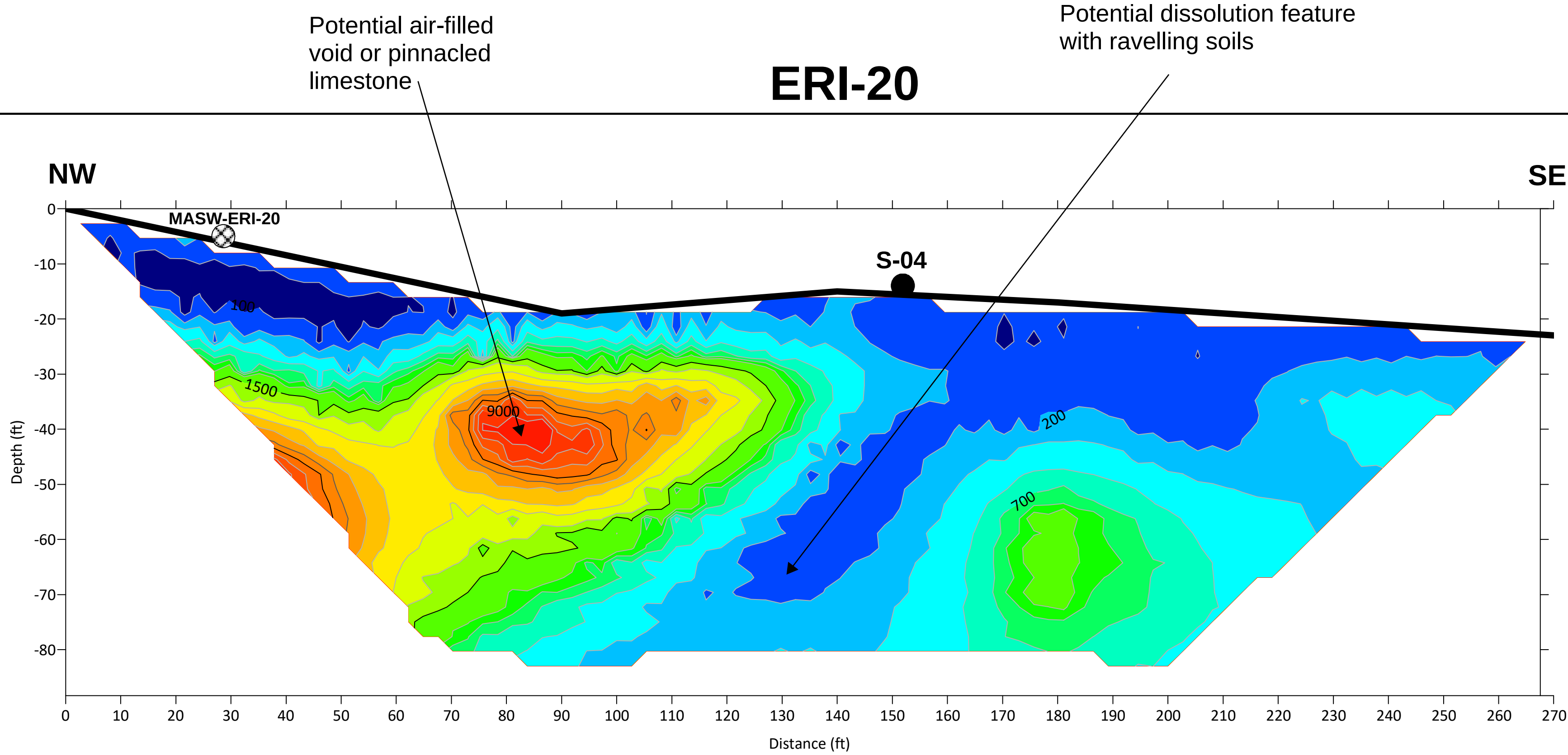
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-19)

PREPARED FOR
Candela

PROJECT NO.

SHEET NO.
19 OF 30

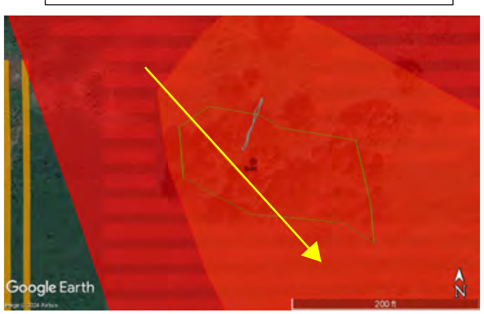
ERI-20



LEGEND

- ● OBSERVED KARST FEATURE
- ⊗ COMPLETED MASW TEST

Resistivity (Ohm-m): 0, 100, 200, 300, 500, 700, 850, 1000, 1500, 2000, 3000, 4000, 5000, 6000, 7000, 8000, 9000, 10000



Vertical ERI Scale: 1" = 20' (0, 10, 20)

Horizontal ERI Scale: 1" = 20' (0, 10, 20)

NOTES: Geophysical data acquired on June 12, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO — 4405 S Clinton Ave, South Plainfield, NJ 07080, (908) 754-8800, www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT: **Geophysical Investigation Summer Shade Solar Project Metcalfe & Monroe Counties, Kentucky**

SCALE:

SOURCE: AGI EarthImager

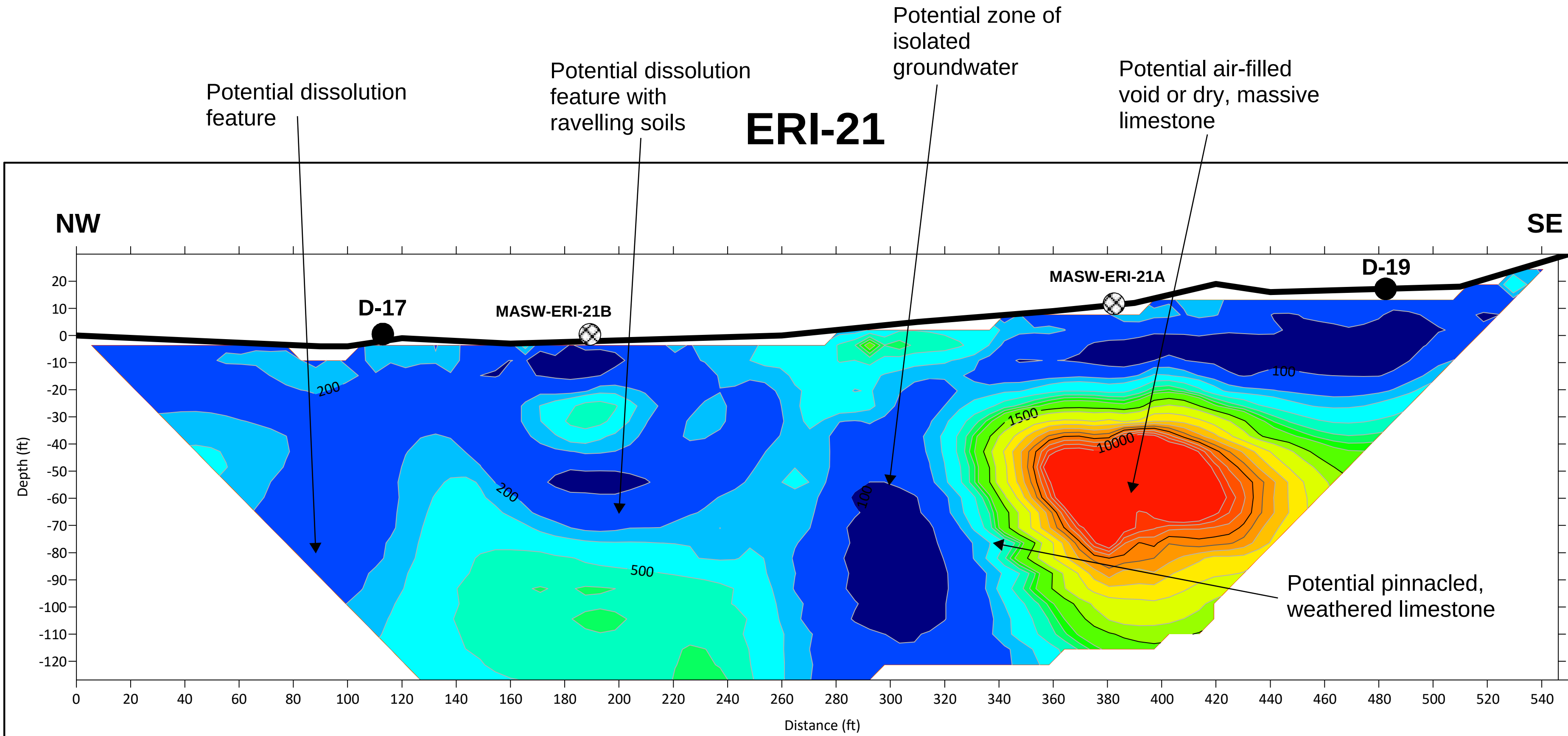
ATTACHMENT TITLE: **Electrical Resistivity Imaging Profile (ERI-20)**

PREPARED FOR: Candela

PROJECT NO.

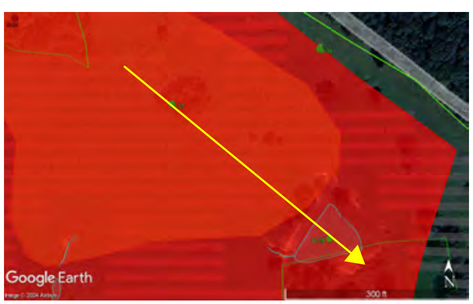
SHEET NO. **20 OF 30**

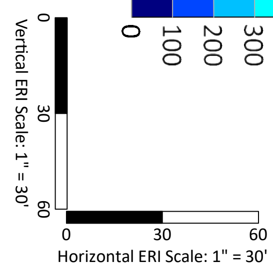
ERI-21

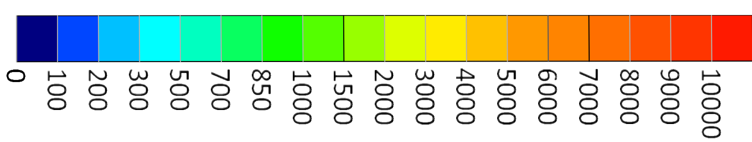


LEGEND

- ● OBSERVED KARST FEATURE
- ⊗ COMPLETED MASW TEST







NOTES: Geophysical data acquired on June 12, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

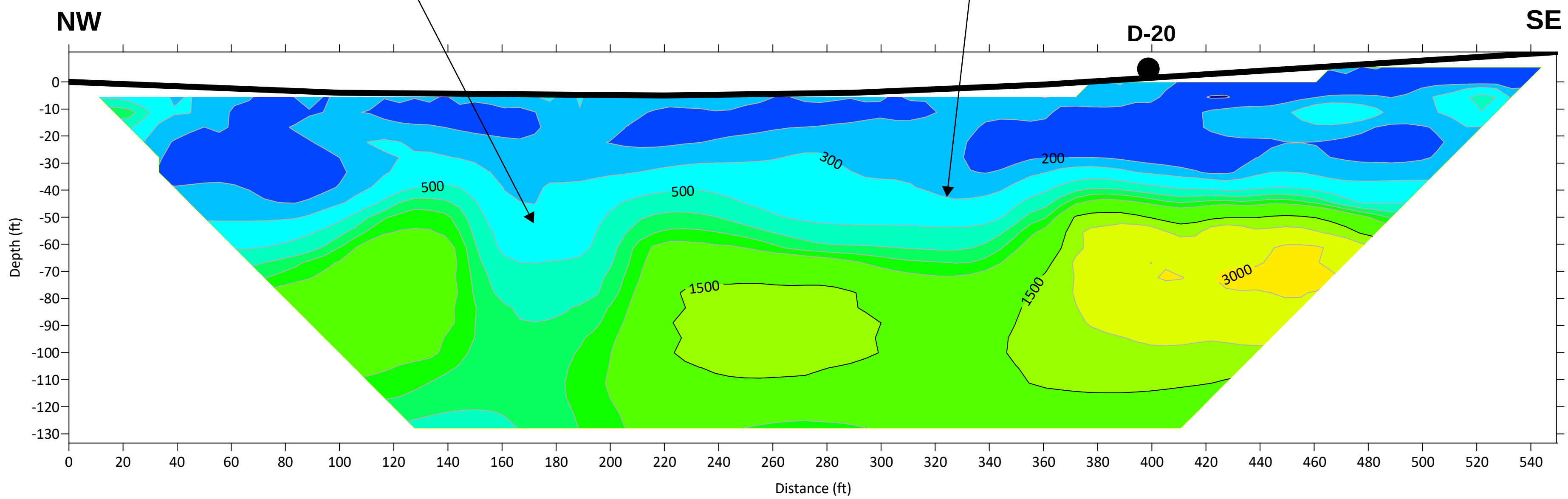
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-21)

PREPARED FOR
Candela

PROJECT NO.

SHEET NO.
21 OF 30

ERI-22

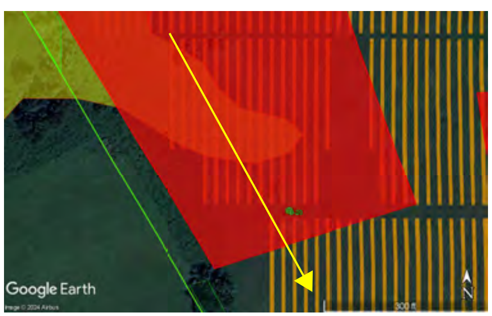


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST

0 100 200 300 500 700 850 1000 1500 2000 3000 4000 5000 6000 7000 8000 9000 10000

Resistivity (Ohm-m)



Vertical ERI Scale: 1" = 30'
0 30 60

0 30 60
Horizontal ERI Scale: 1" = 30'

NOTES: Geophysical data acquired on June 12, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

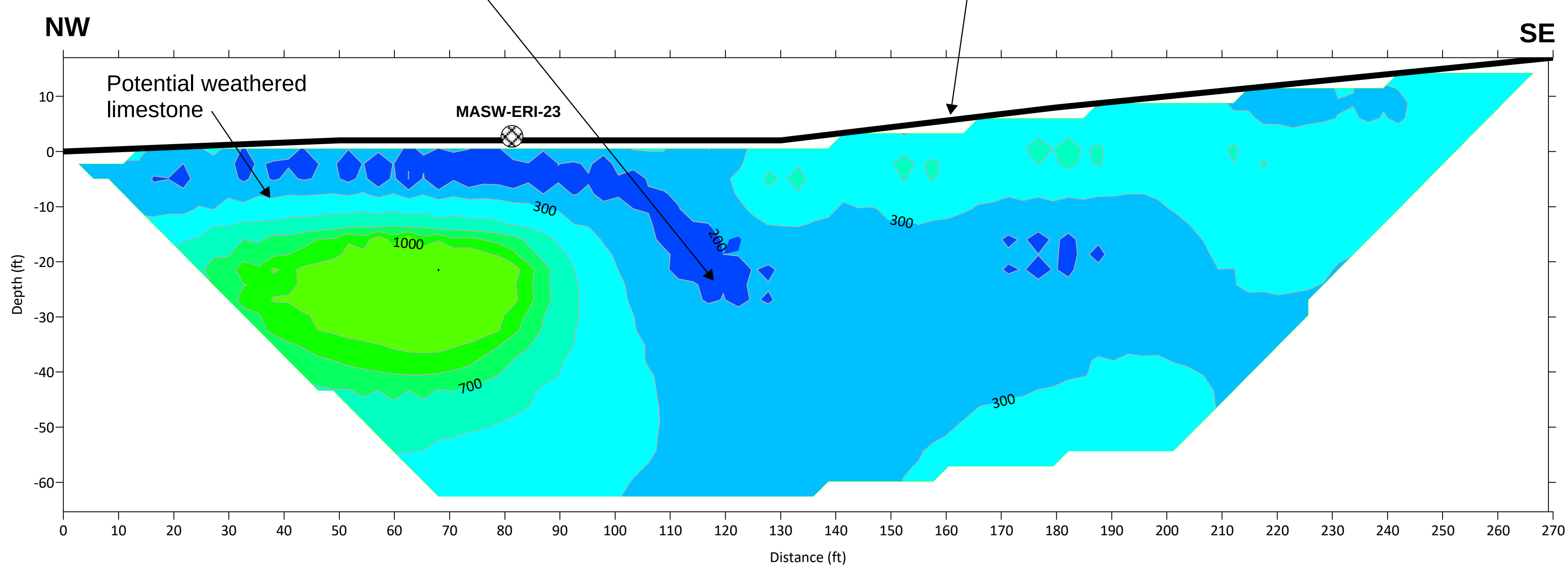
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-22)

PREPARED FOR
Candela

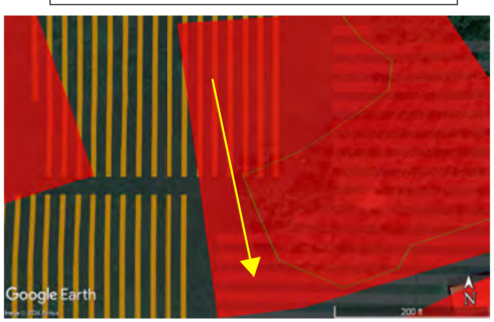
PROJECT NO.

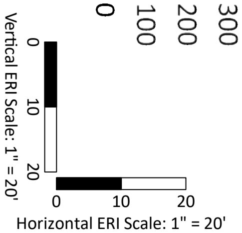
SHEET NO.
22 OF 30

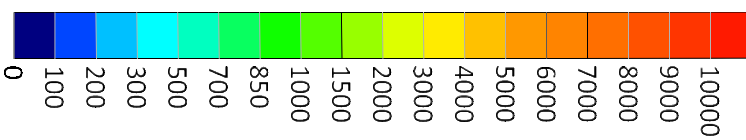
ERI-23



LEGEND
- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







Resistivity (Ohm-m)

NOTES: Geophysical data acquired on June 12, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE: AGI EarthImager

ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-23)

PREPARED FOR
Candela

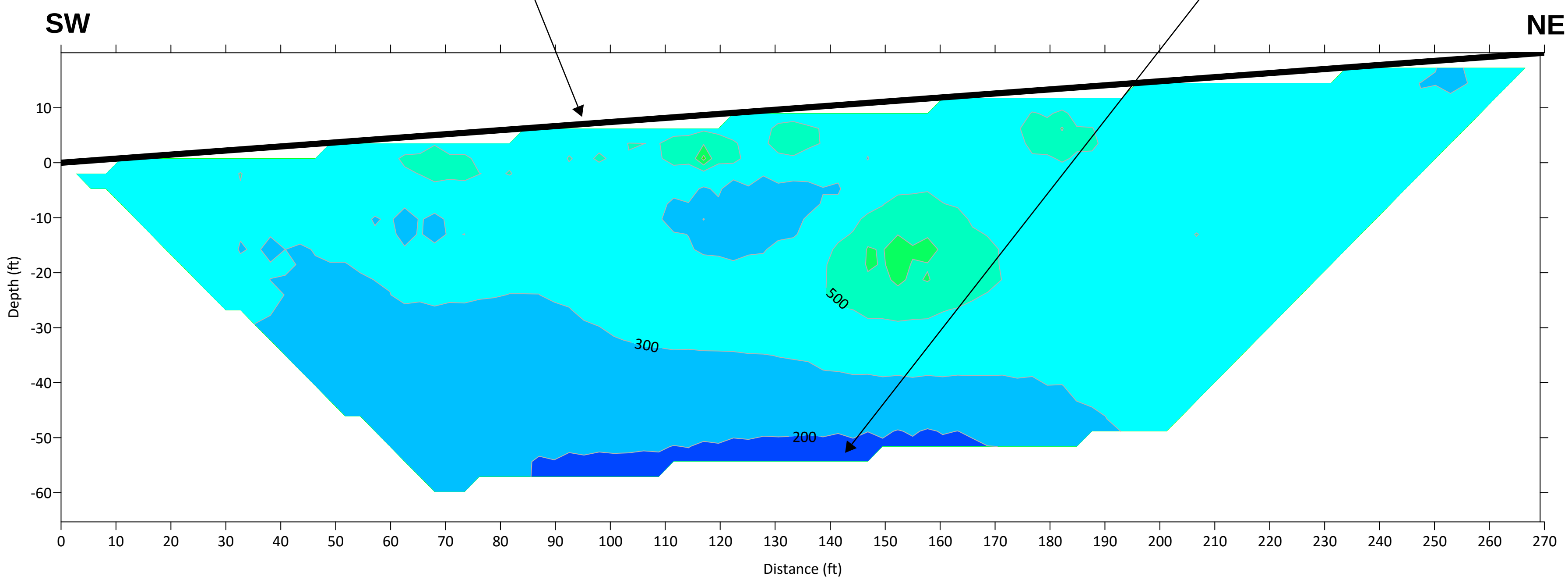
PROJECT NO.

SHEET NO. 23 OF 30

Potential weathered limestone near surface or coarse-grained material

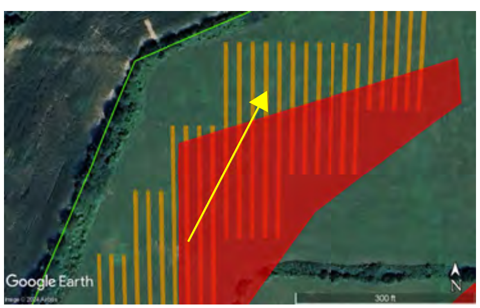
ERI-24

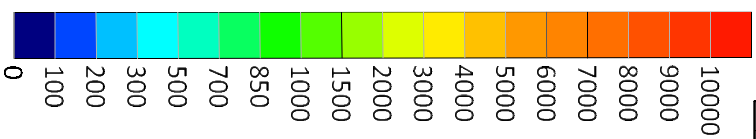
Potential zone of groundwater/saturated limestone



LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST





Vertical ERI Scale: 1" = 20'

0 10 20

Horizontal ERI Scale: 1" = 20'

NOTES: Geophysical data acquired on June 12, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

PROJECT: **Geophysical Investigation Summer Shade Solar Project Metcalfe & Monroe Counties, Kentucky**

SCALE:

SOURCE: AGI EarthImager

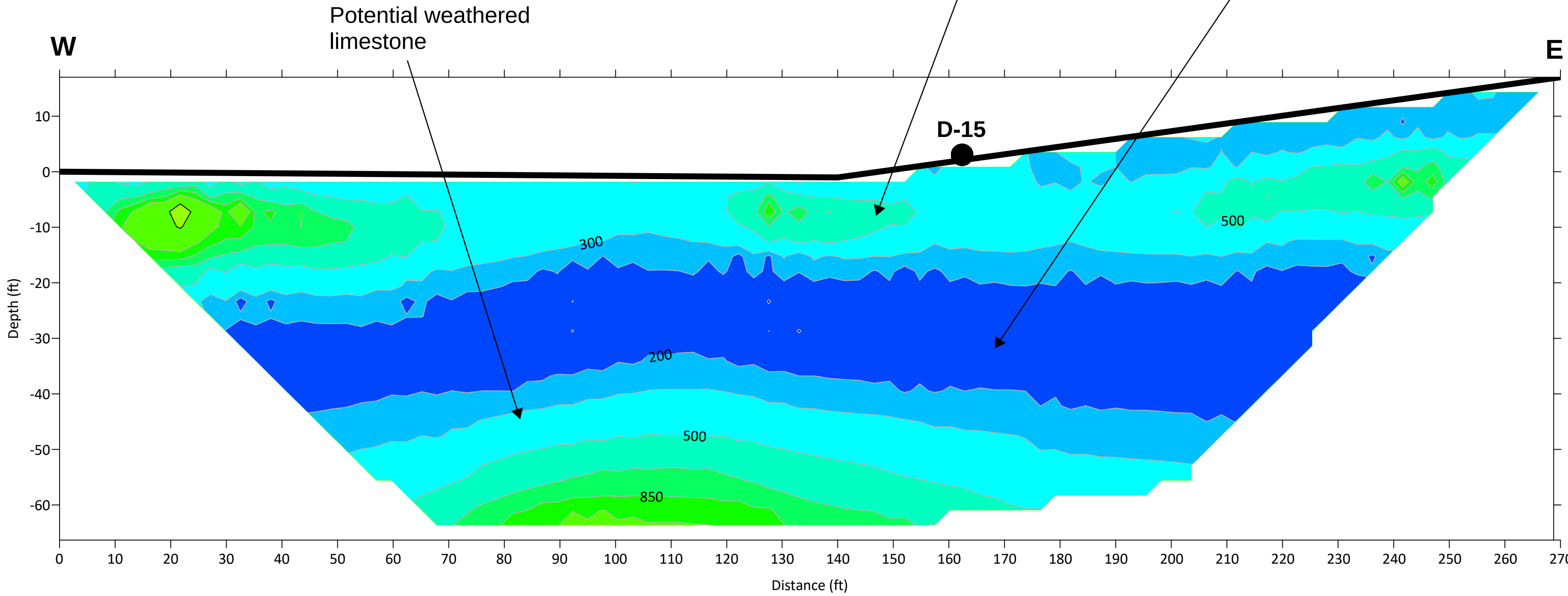
ATTACHMENT TITLE: **Electrical Resistivity Imaging Profile (ERI-24)**

PREPARED FOR: Candela

PROJECT NO.

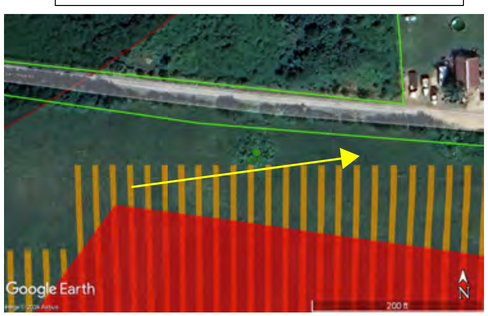
SHEET NO. **24 OF 30**

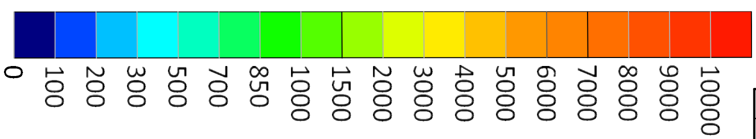
ERI-25



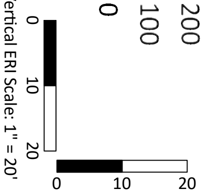
LEGEND

- ● OBSERVED KARST FEATURE
- COMPLETED MASW TEST





Resistivity (Ohm-m)



Vertical ERI Scale: 1" = 20'

Horizontal ERI Scale: 1" = 20'

NOTES: Geophysical data acquired on June 12, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO

4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

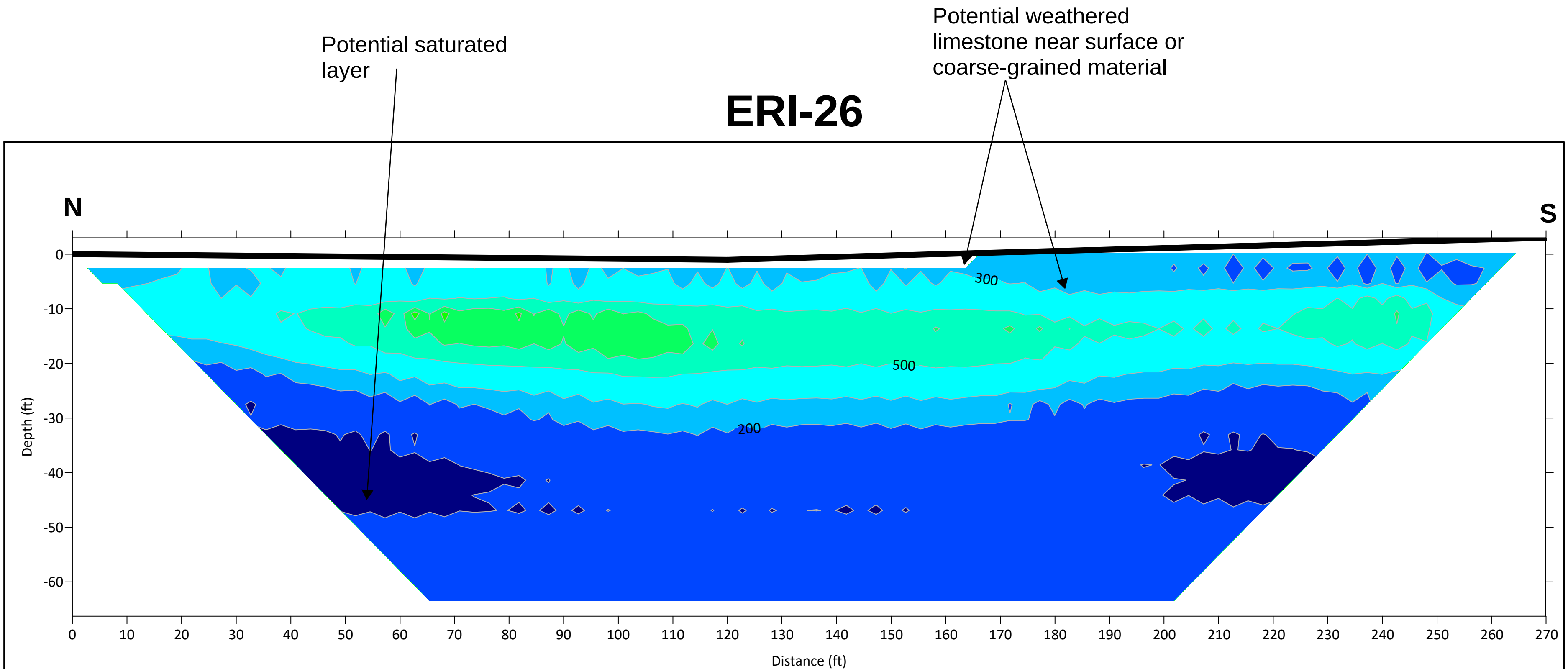
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-25)

PREPARED FOR
Candela

PROJECT NO.

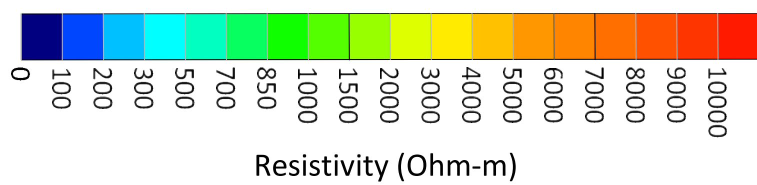
SHEET NO.
25 OF 30

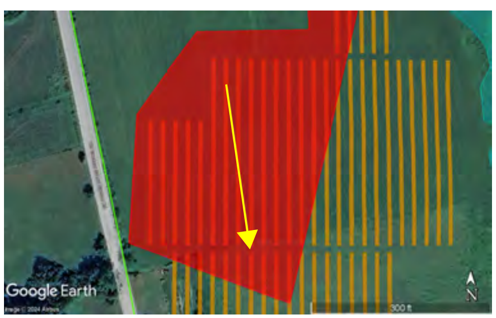
ERI-26



LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST





Vertical ERI Scale: 1" = 20'
0 10 20

0 10 20
Horizontal ERI Scale: 1" = 20'

NOTES: Geophysical data acquired on June 13, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

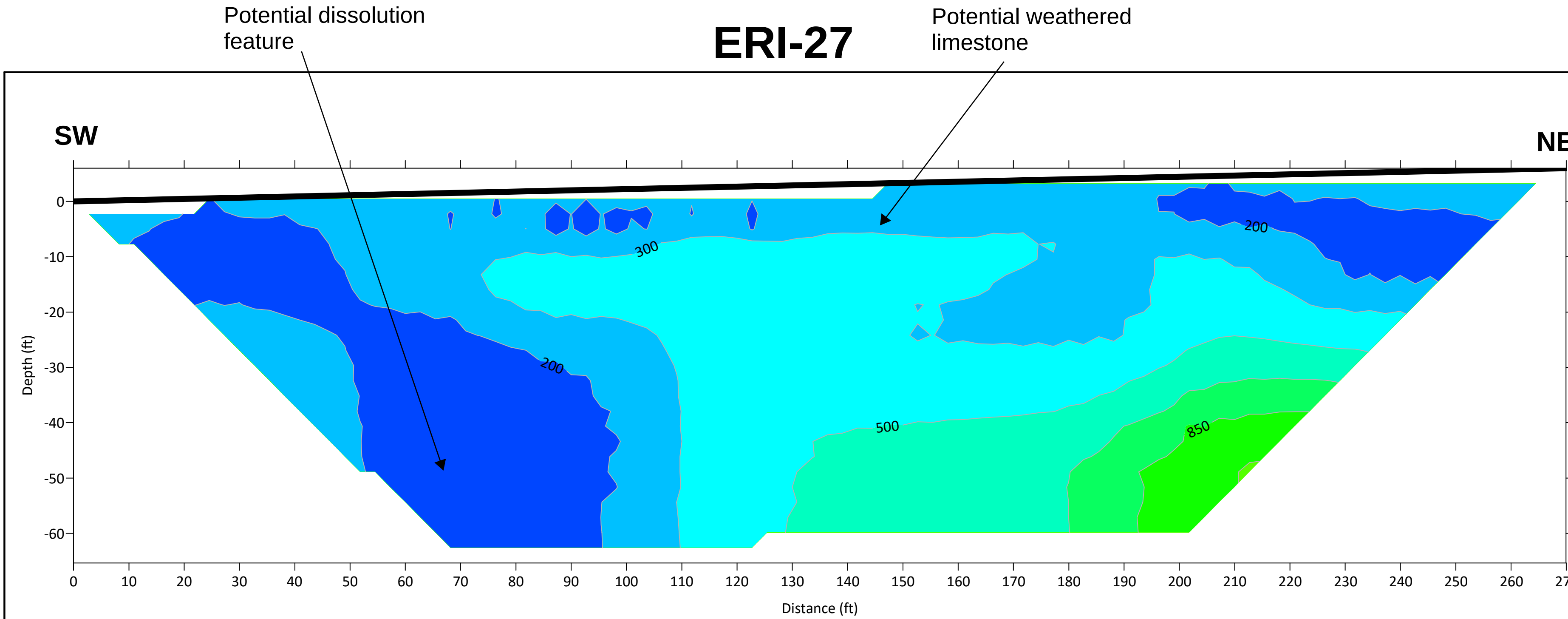
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-26)

PREPARED FOR
Candela

PROJECT NO.

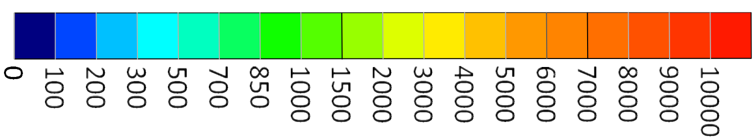
SHEET NO.
26 OF 30

ERI-27

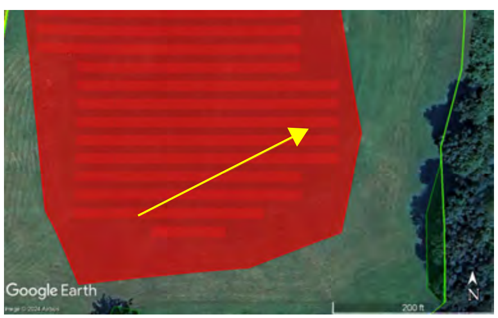


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



Resistivity (Ohm-m)



Vertical ERI Scale: 1" = 20'

Horizontal ERI Scale: 1" = 20'

NOTES: Geophysical data acquired on June 13, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

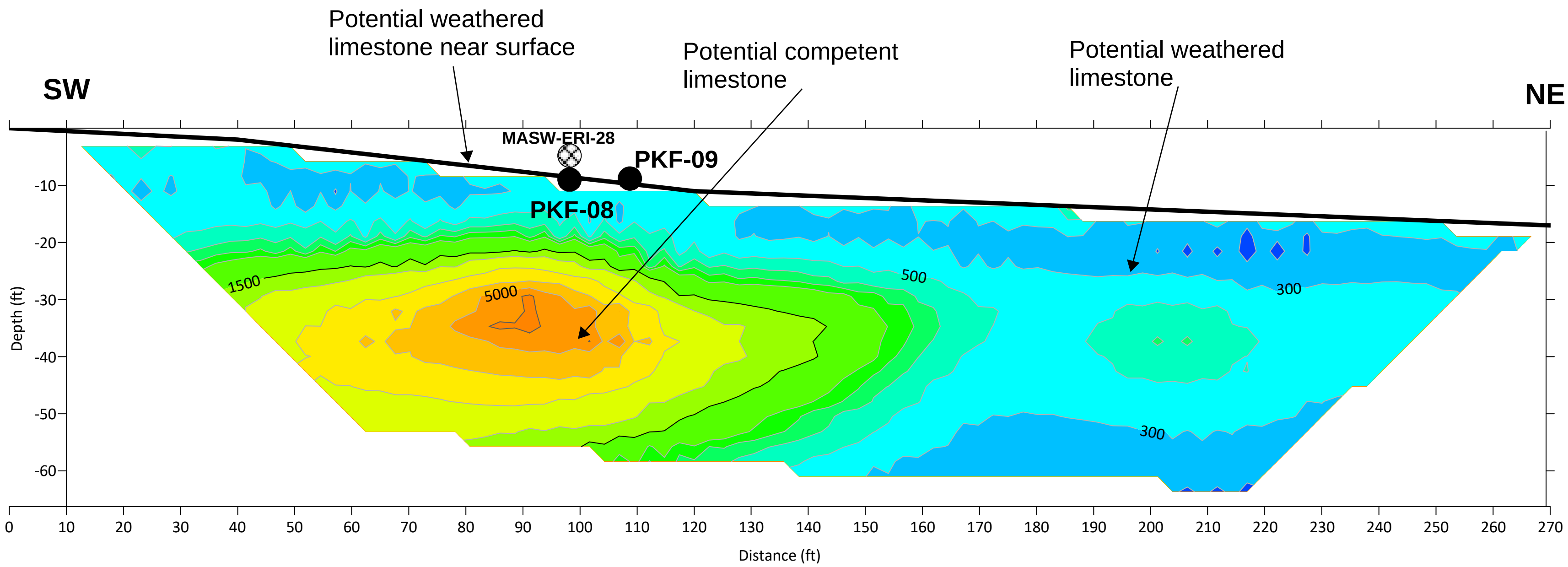
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-27)

PREPARED FOR
Candela

PROJECT NO.

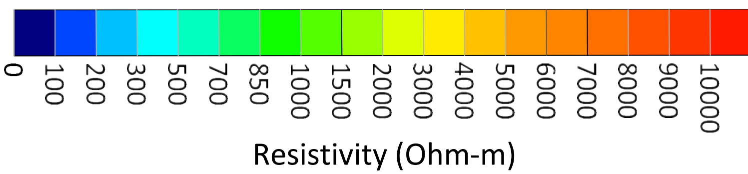
SHEET NO.
27 OF 30

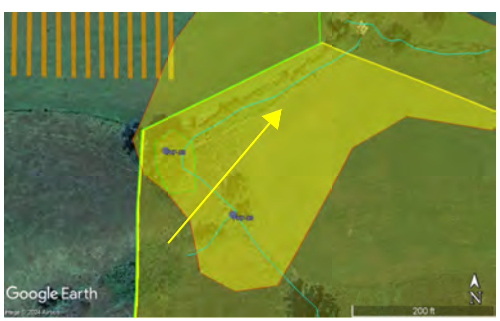
ERI-28

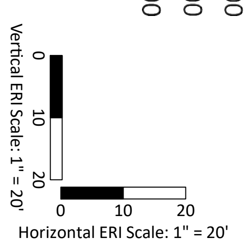


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data acquired on June 13, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

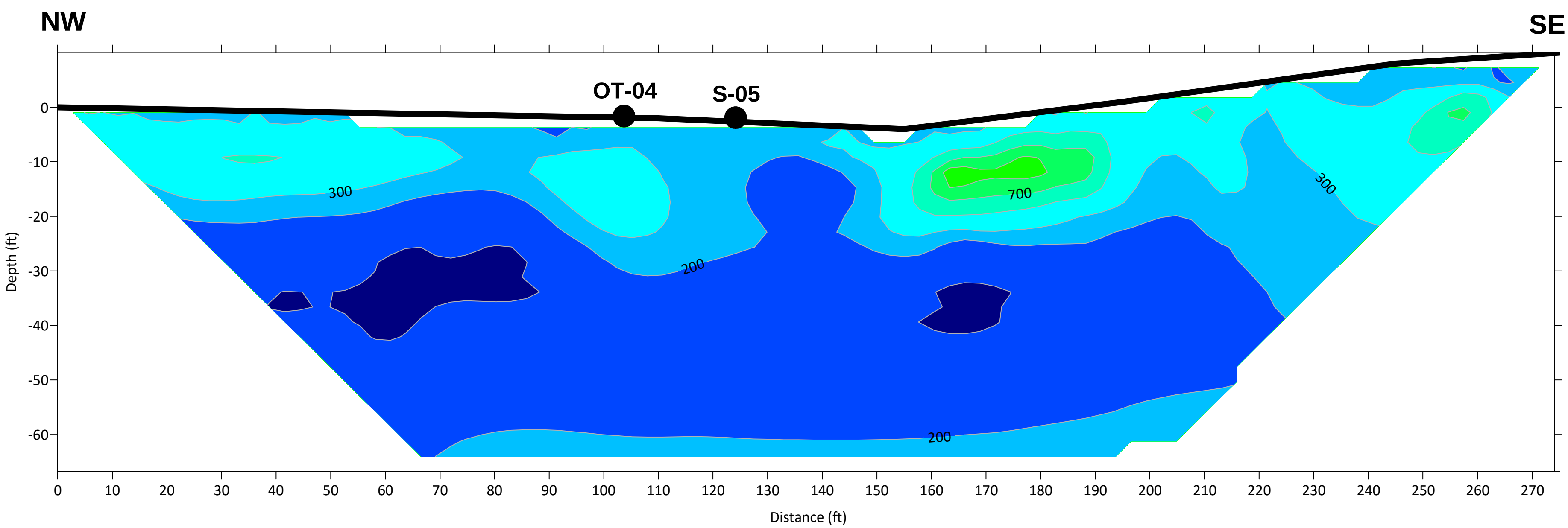
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-28)

PREPARED FOR
Candela

PROJECT NO.

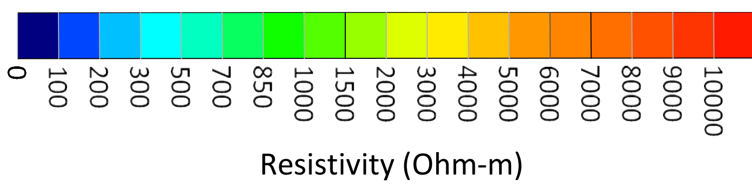
SHEET NO.
28 OF 30

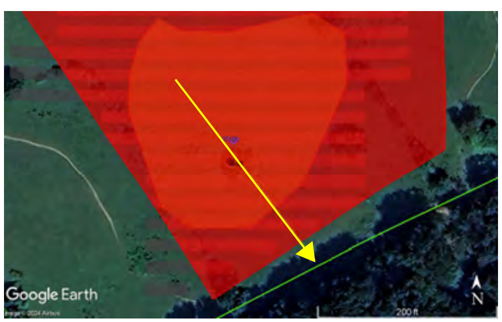
ERI-29



LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST





Vertical ERI Scale: 1" = 20'

Horizontal ERI Scale: 1" = 20'

NOTES: Geophysical data acquired on June 13, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 5-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE: AGI EarthImager

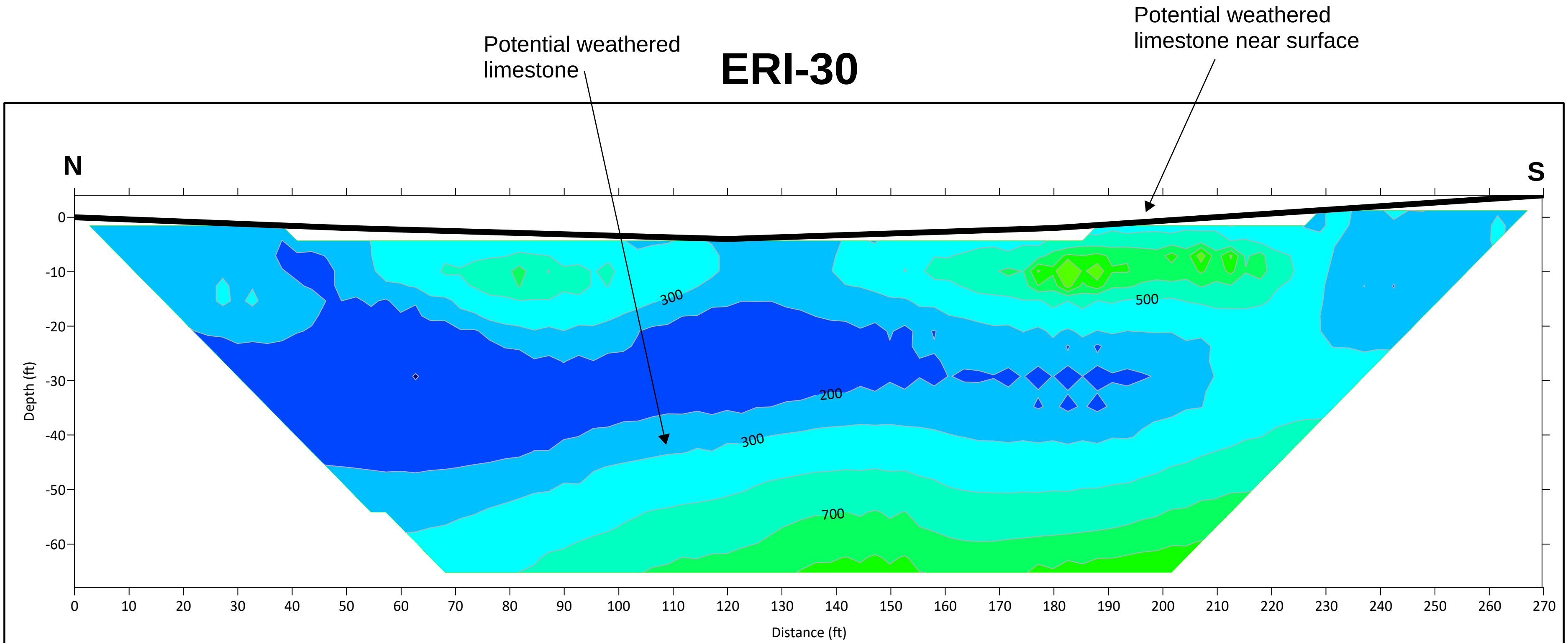
ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-29)

PREPARED FOR
Candela

PROJECT NO.

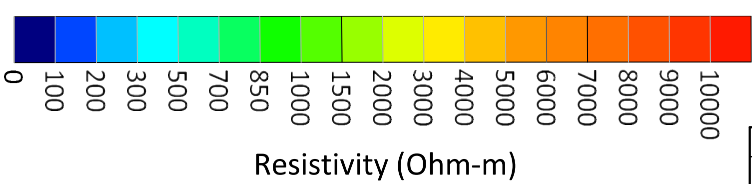
SHEET NO. **29 OF 30**

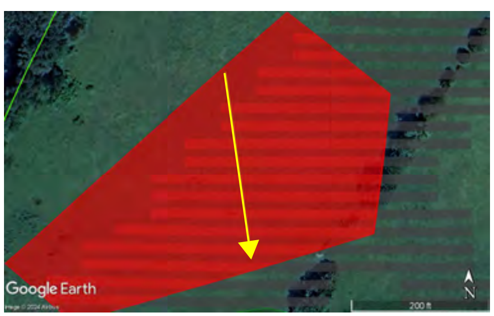
ERI-30

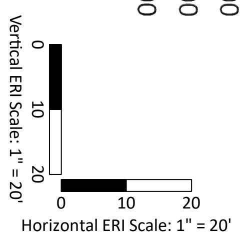


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data acquired on June 13, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	06/21/2024
DES		
CHK		
REV	ZAA	11/25/2024
PROJ. MGR.		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

ATTACHMENT TITLE
Electrical Resistivity Imaging Profile (ERI-30)

PREPARED FOR
Candela

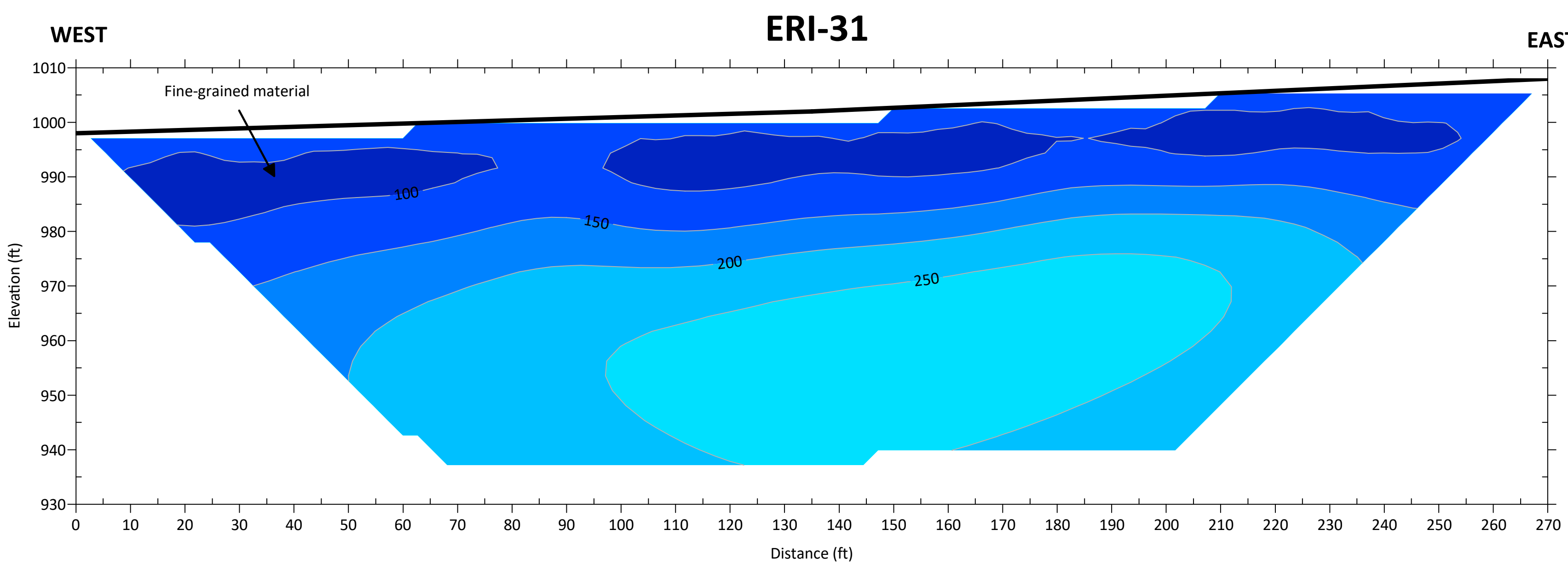
PROJECT NO.

SHEET NO.
30 OF 30

Attachment C-2

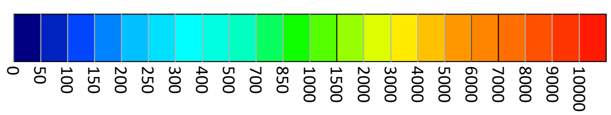
Electrical Resistivity Imaging (ERI) Profiles – Phase II

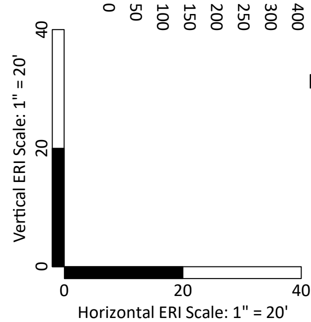
ERI-31



LEGEND

- ● OBSERVED KARST FEATURE
- ⊕ COMPLETED MASW TEST





NOTES: Geophysical data was acquired on September 17, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

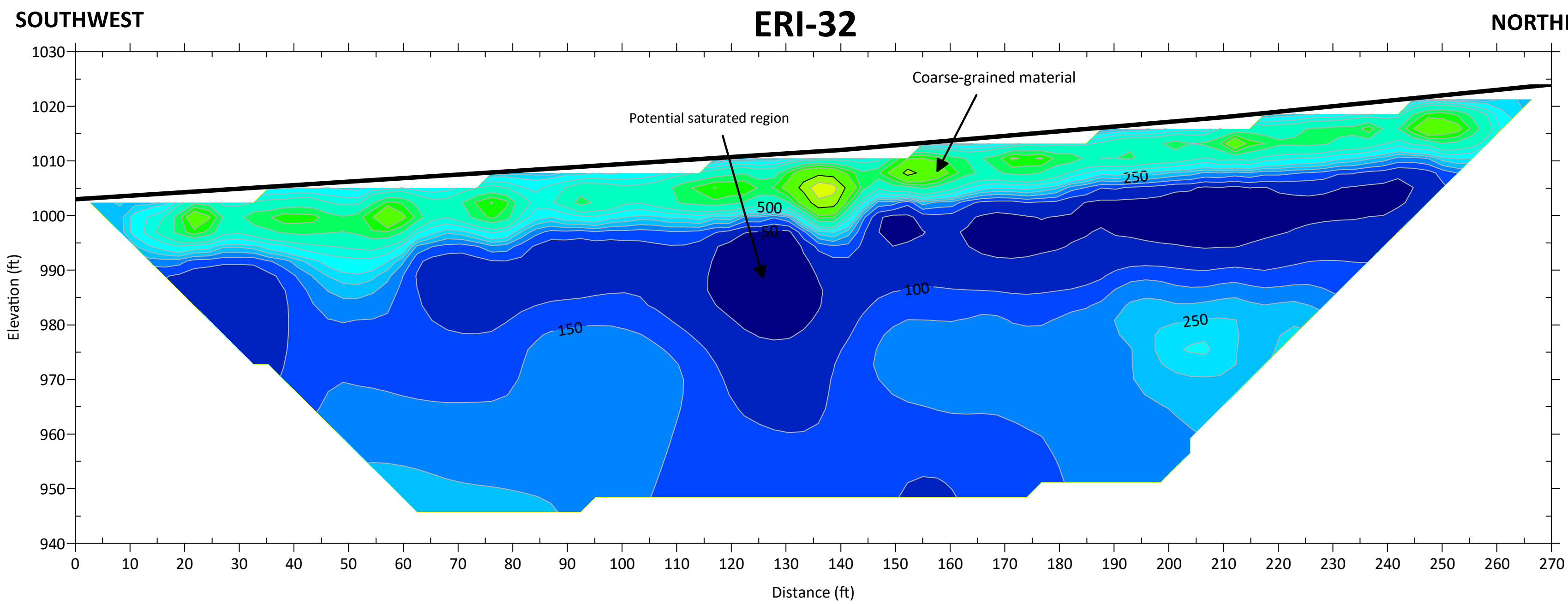
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-31)

PREPARED FOR
Candela

PROJECT NO.

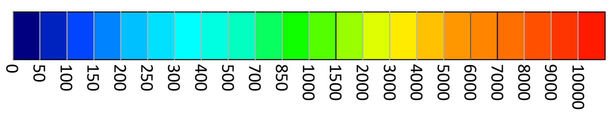
SHEET NO.
1 OF 36

ERI-32

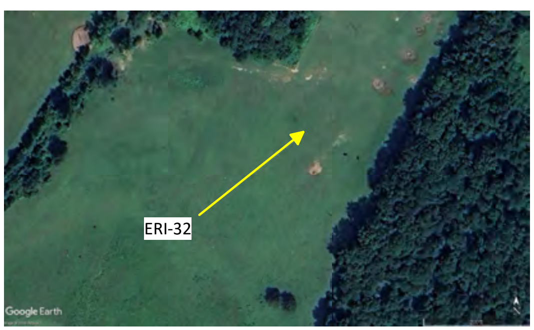


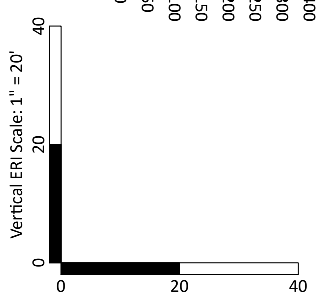
LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



Resistivity (Ohm-m)





Horizontal ERI Scale: 1" = 20'

NOTES: Geophysical data was acquired on September 17, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-32)

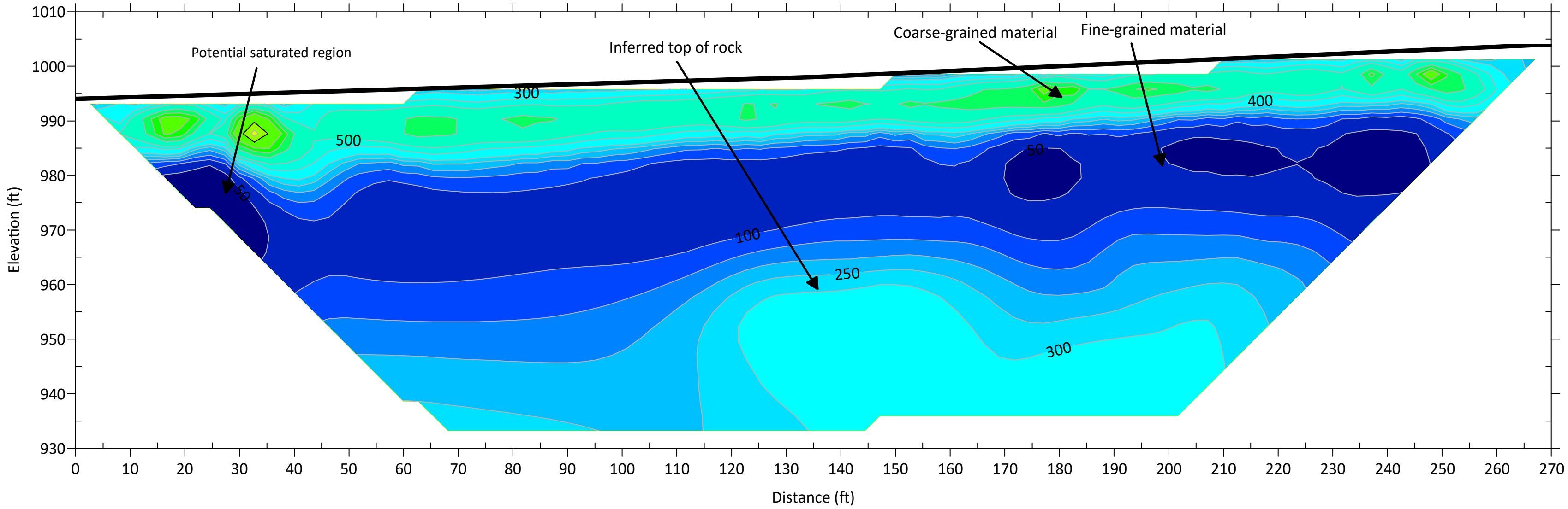
PREPARED FOR
Candela

PROJECT NO.

SHEET NO.
2 OF 36

ERI-33

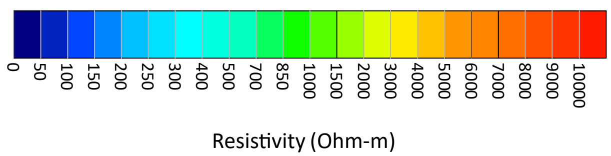
SOUTHWEST | NORTHEAST

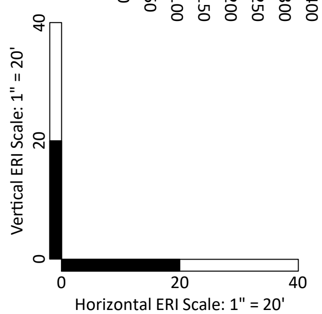


LEGEND

OBSERVED KARST FEATURE

COMPLETED MASW TEST





NOTES: Geophysical data was acquired on September 17, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

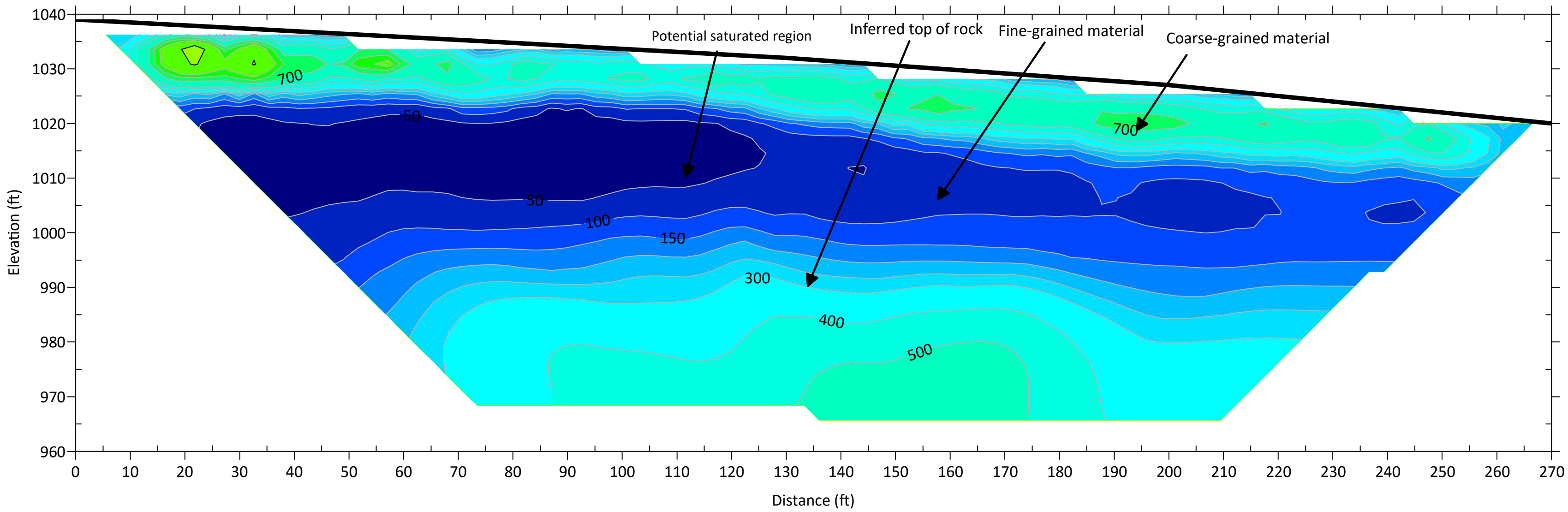
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-33)

PREPARED FOR
Candela

PROJECT NO.

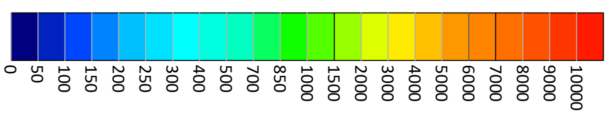
SHEET NO.
3 OF 36

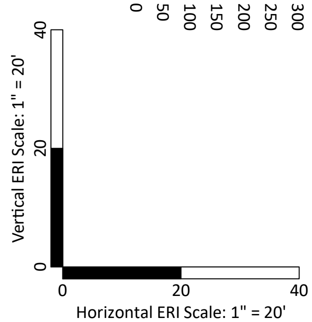
ERI-34

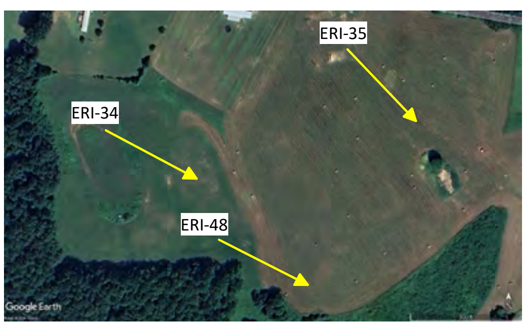


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data was acquired on September 17, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT: **Geophysical Investigation Summer Shade Solar Project Metcalfe & Monroe Counties, Kentucky**

SCALE:

SOURCE: AGI EarthImager

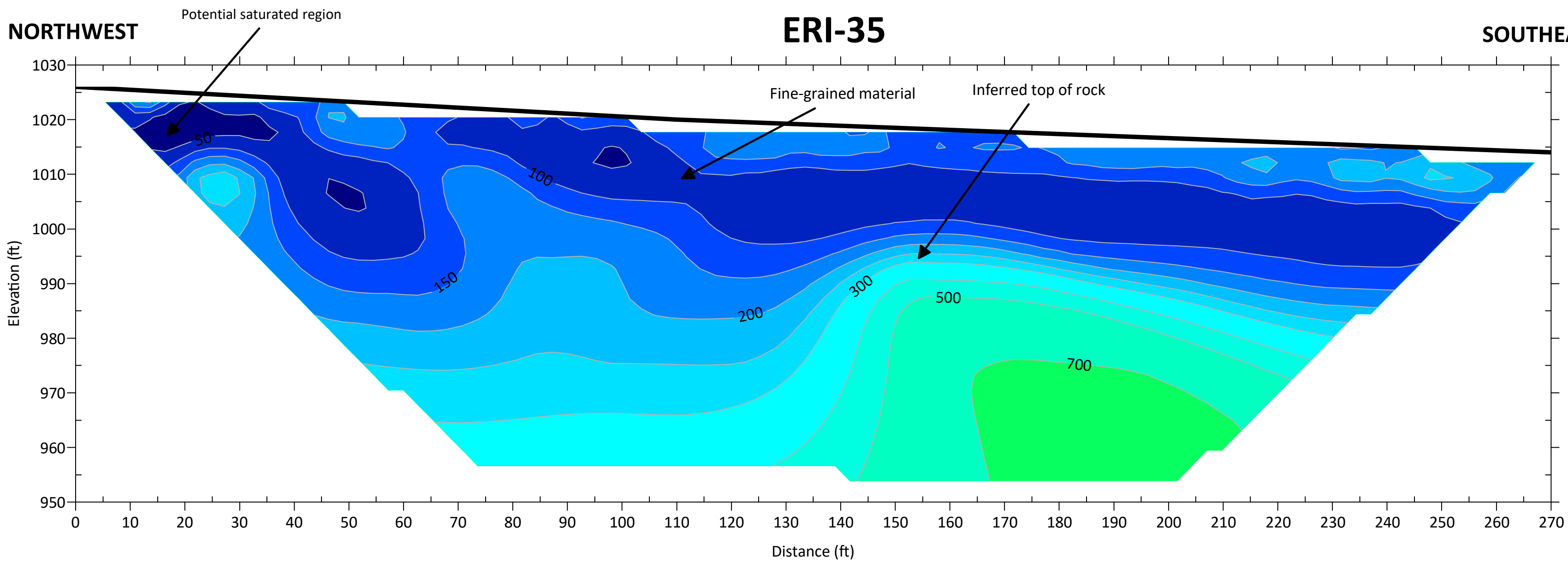
ATTACHMENT TITLE: **Electrical Resistivity Imaging Profiles (ERI-34)**

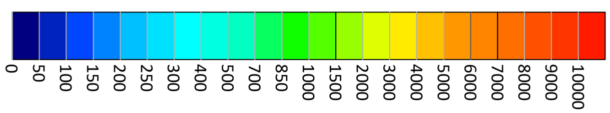
PREPARED FOR: Candela

PROJECT NO.

SHEET NO. **4 OF 36**

ERI-35

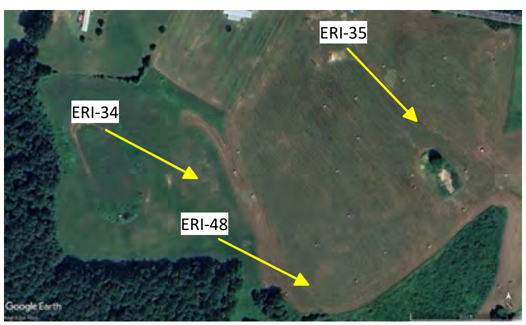


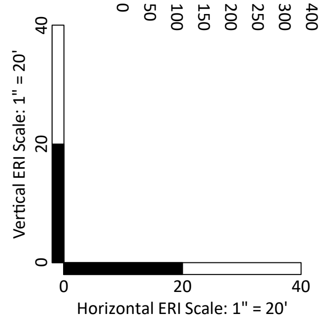


Resistivity (Ohm-m)

LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST





NOTES: Geophysical data was acquired on September 17, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT: **Geophysical Investigation Summer Shade Solar Project Metcalfe & Monroe Counties, Kentucky**

SCALE:

SOURCE: AGI EarthImager

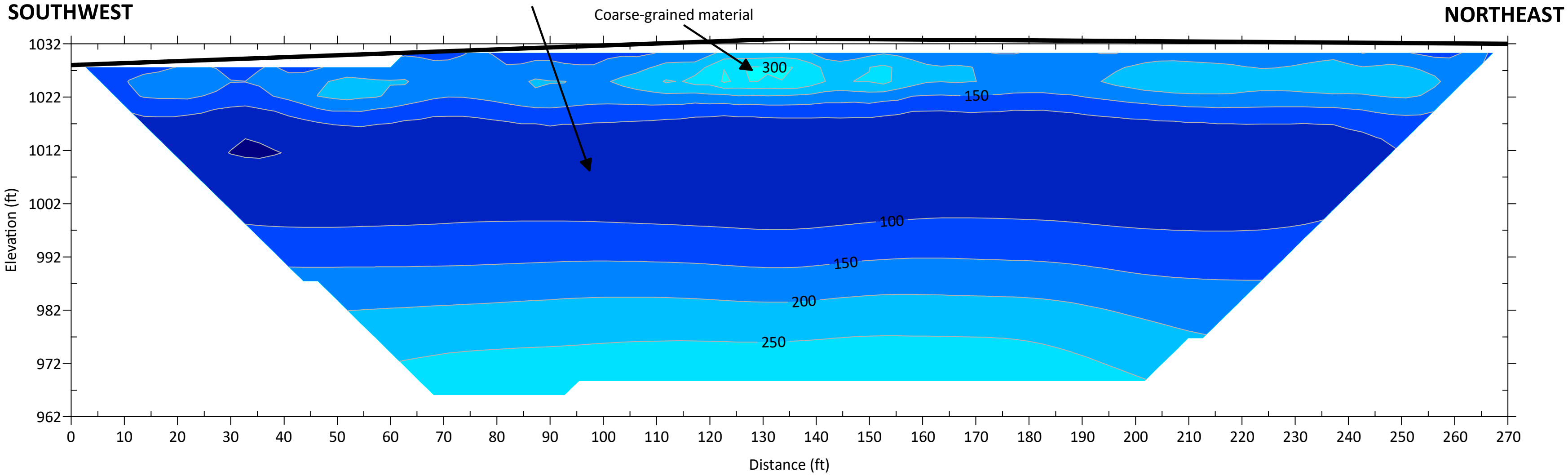
ATTACHMENT TITLE: **Electrical Resistivity Imaging Profiles (ERI-35)**

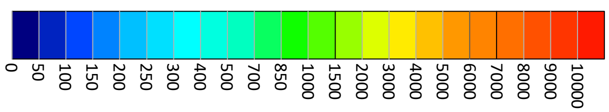
PREPARED FOR: Candela

PROJECT NO.

SHEET NO. **5 OF 36**

ERI-36

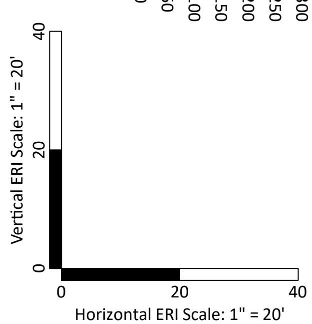




Resistivity (Ohm-m)

LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



NOTES: Geophysical data was acquired on September 17, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

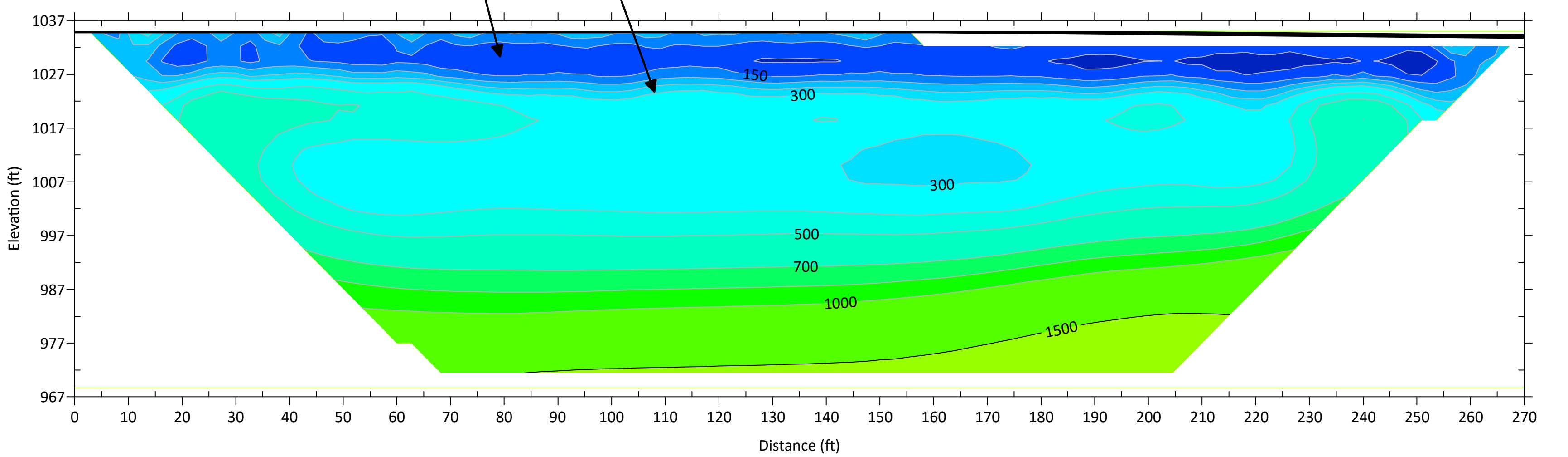
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-36)

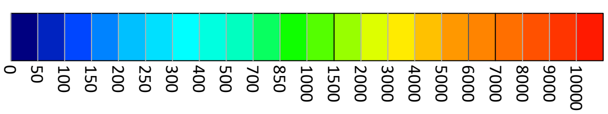
PREPARED FOR
Candela

PROJECT NO.

SHEET NO.
6 OF 36

ERI-37

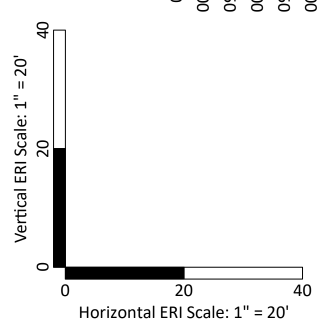




Resistivity (Ohm-m)

LEGEND

- ● OBSERVED KARST FEATURE
- ⊕ COMPLETED MASW TEST



NOTES: Geophysical data was acquired on September 17, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR.		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

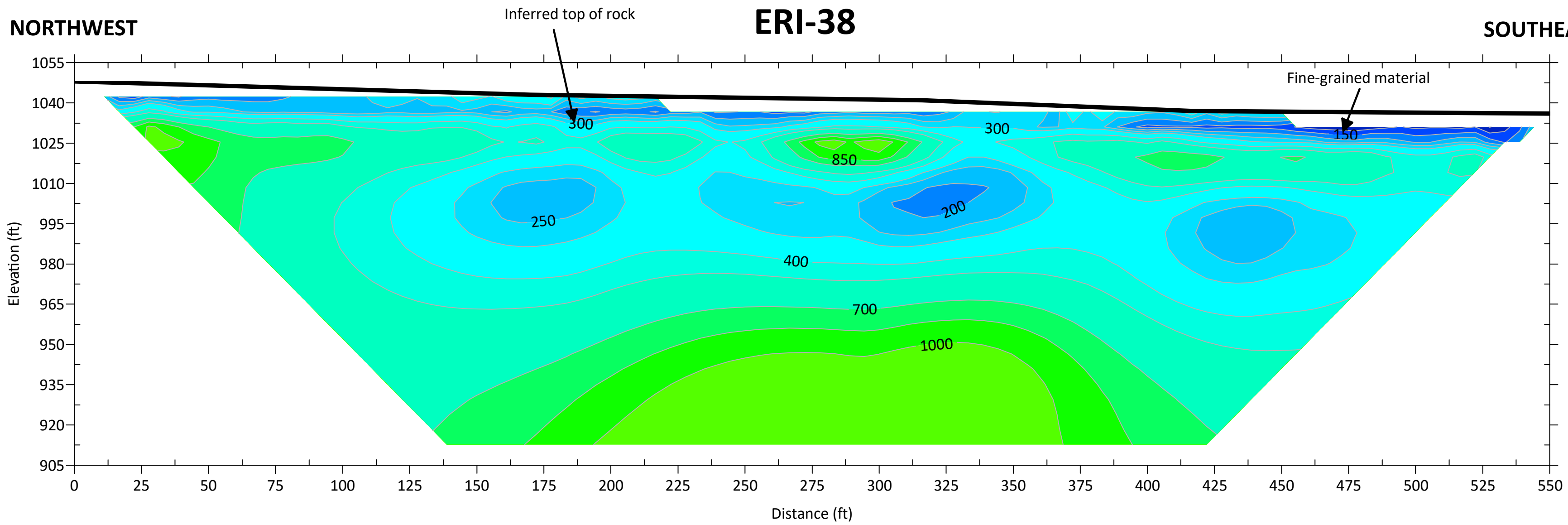
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-37)

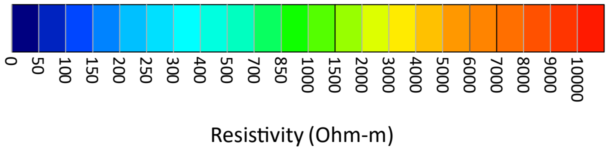
PREPARED FOR
Candela

PROJECT NO.

SHEET NO.
7 OF 36

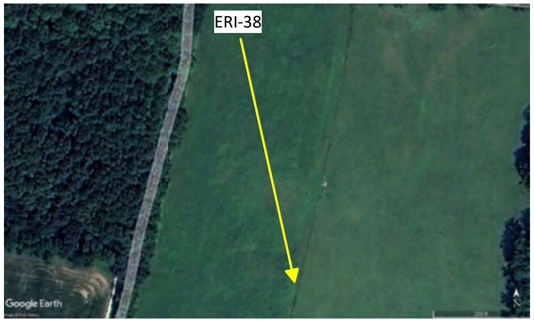
ERI-38

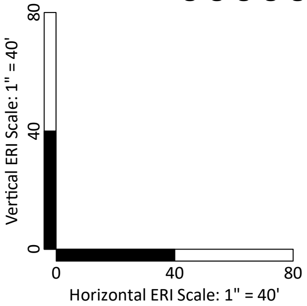




LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST





NOTES: Geophysical data was acquired on September 18, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 56 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT: Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE: AGI EarthImager

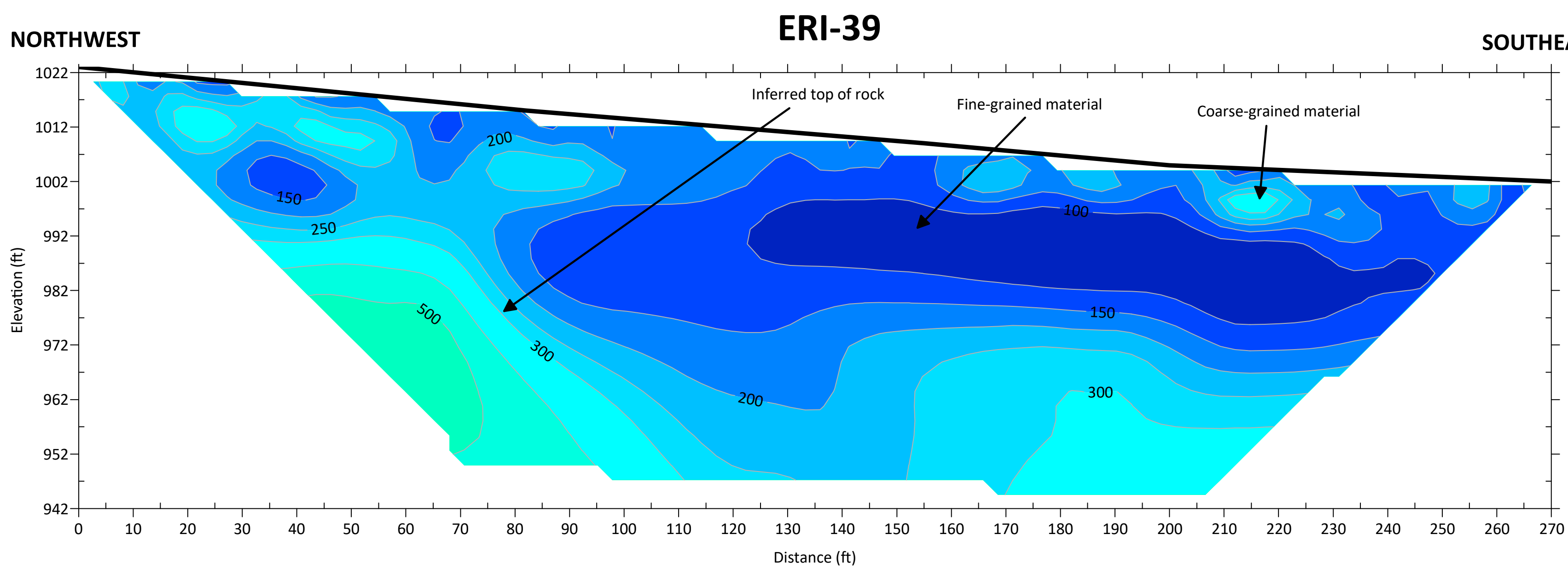
ATTACHMENT TITLE: Electrical Resistivity Imaging Profiles (ERI-38)

PREPARED FOR: Candela

PROJECT NO.

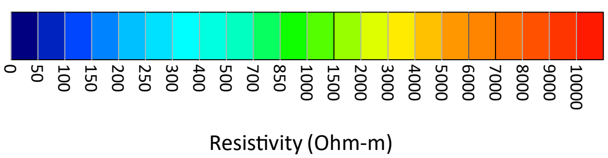
SHEET NO. 8 OF 36

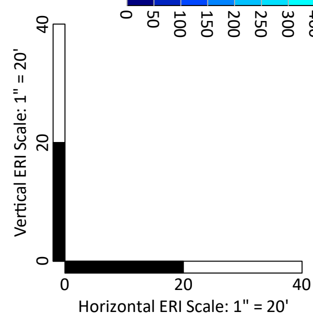
ERI-39



LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST





NOTES: Geophysical data was acquired on September 17, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

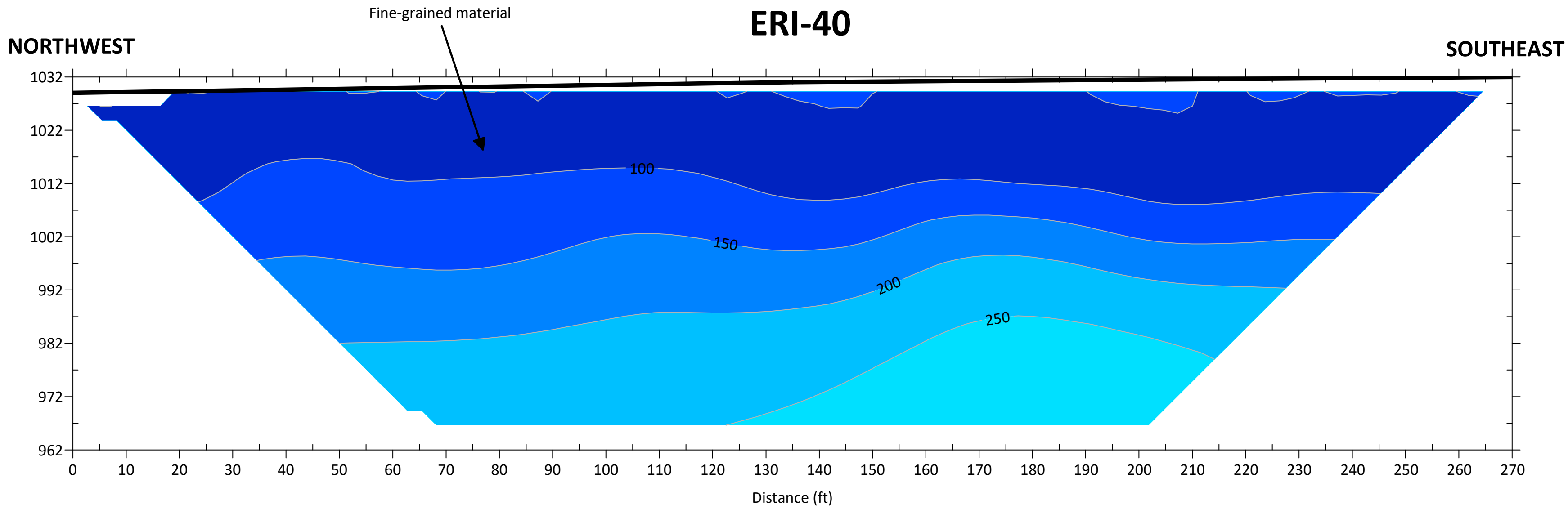
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-39)

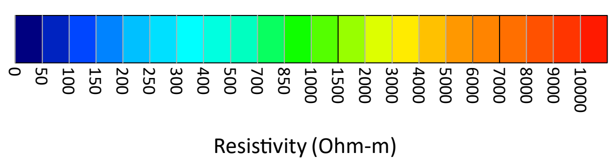
PREPARED FOR
Candela

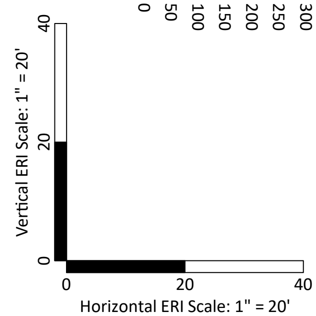
PROJECT NO.

SHEET NO.
9 OF 36

ERI-40







LEGEND

- ● OBSERVED KARST FEATURE
- ⊕ COMPLETED MASW TEST

NOTES: Geophysical data was acquired on September 18, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

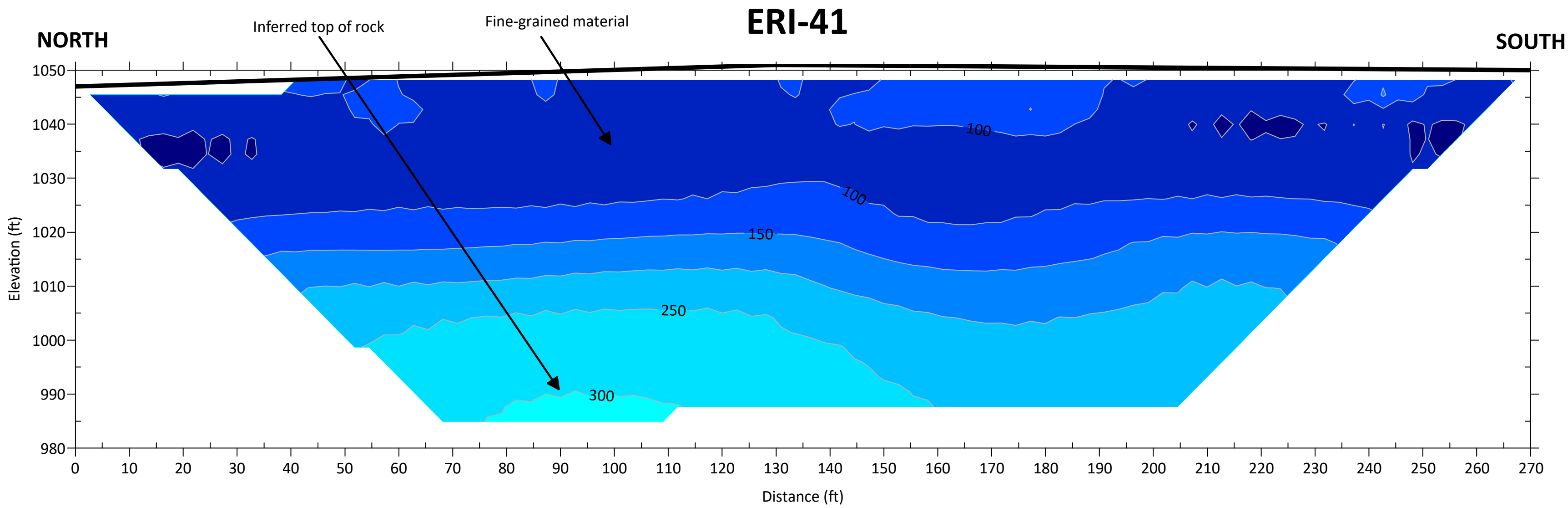
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-40)

PREPARED FOR
Candela

PROJECT NO.

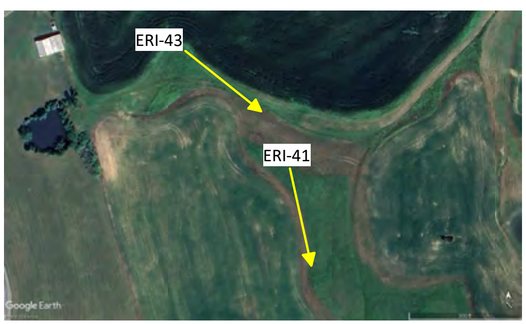
SHEET NO.
10 OF 36

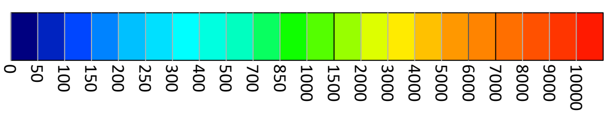
ERI-41

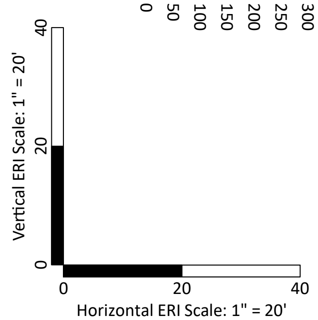


LEGEND

- ● OBSERVED KARST FEATURE
- ⊕ COMPLETED MASW TEST







NOTES: Geophysical data was acquired on September 18, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

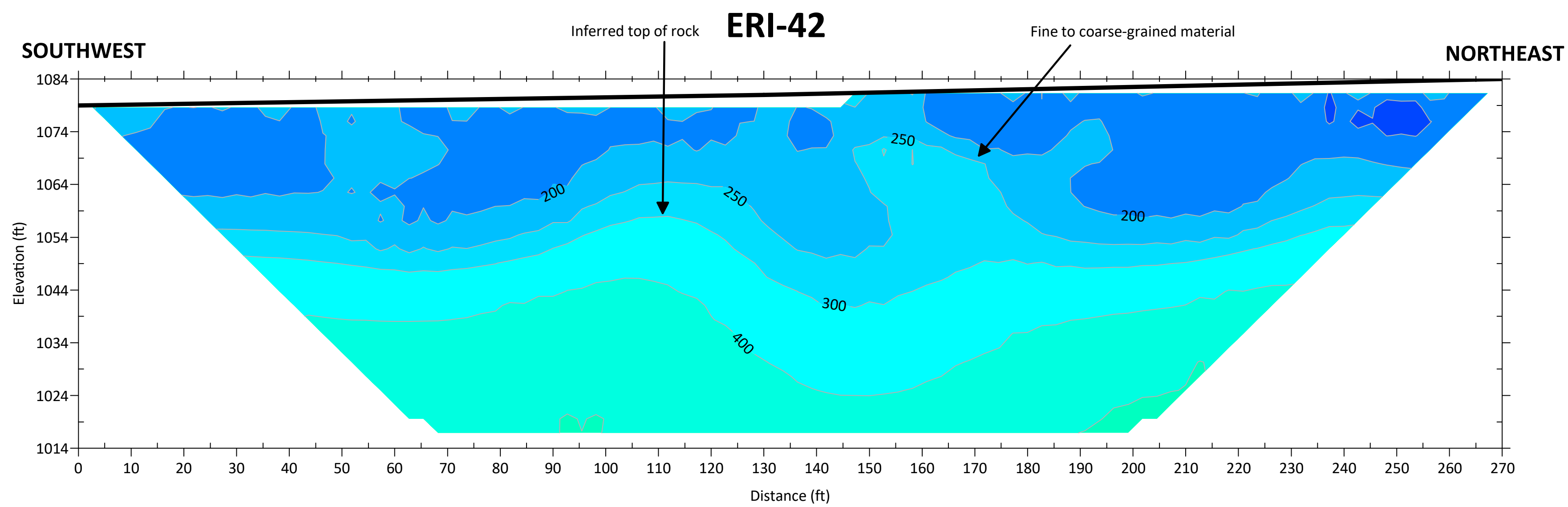
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-41)

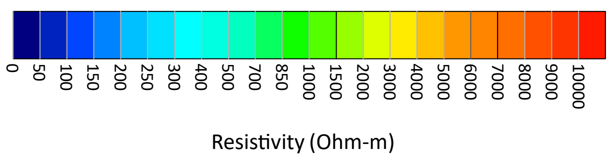
PREPARED FOR
Candela

PROJECT NO.

SHEET NO.
11 OF 36

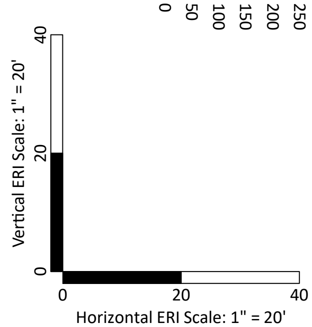
ERI-42





LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



NOTES: Geophysical data was acquired on September 18, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

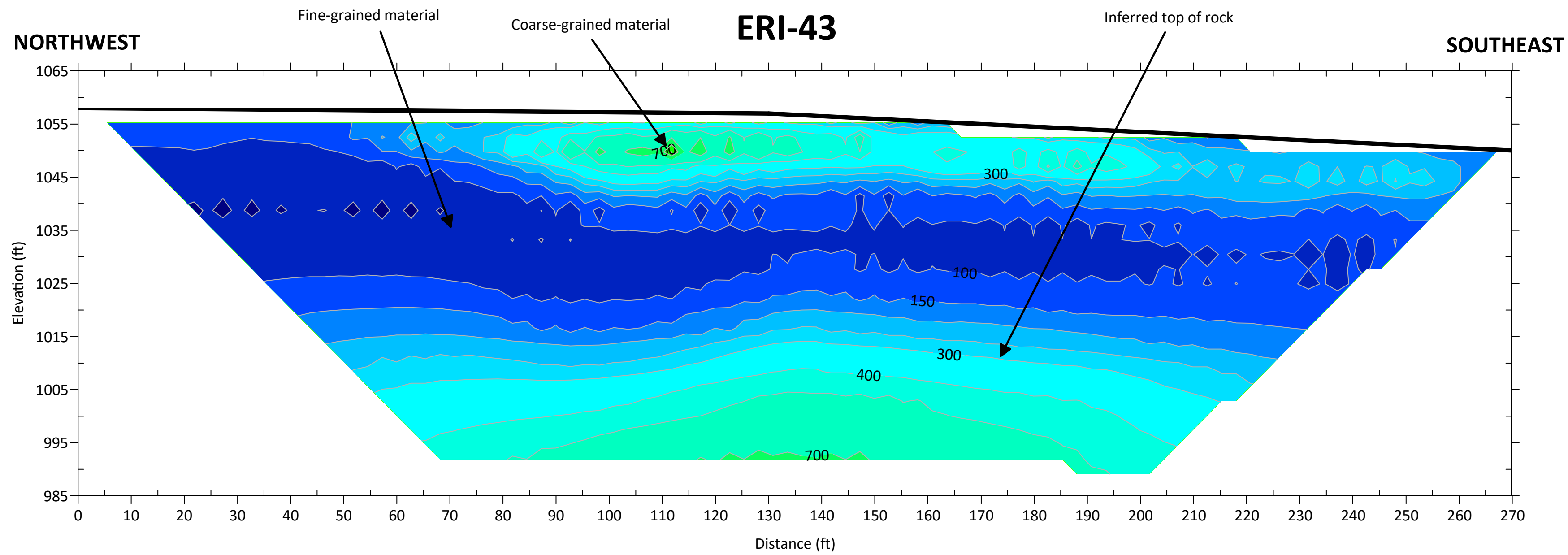
SOURCE:
AGI EarthImager

ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-42)

PREPARED FOR
Candela

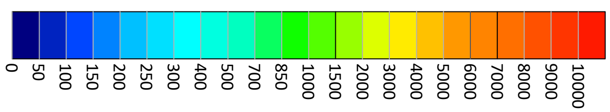
PROJECT NO.

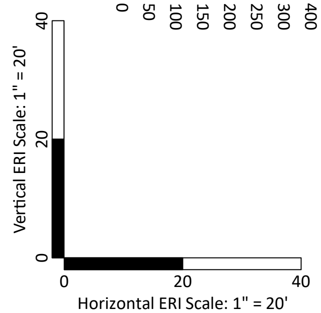
SHEET NO.
12 OF 36



LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST





NOTES: Geophysical data was acquired on September 19, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

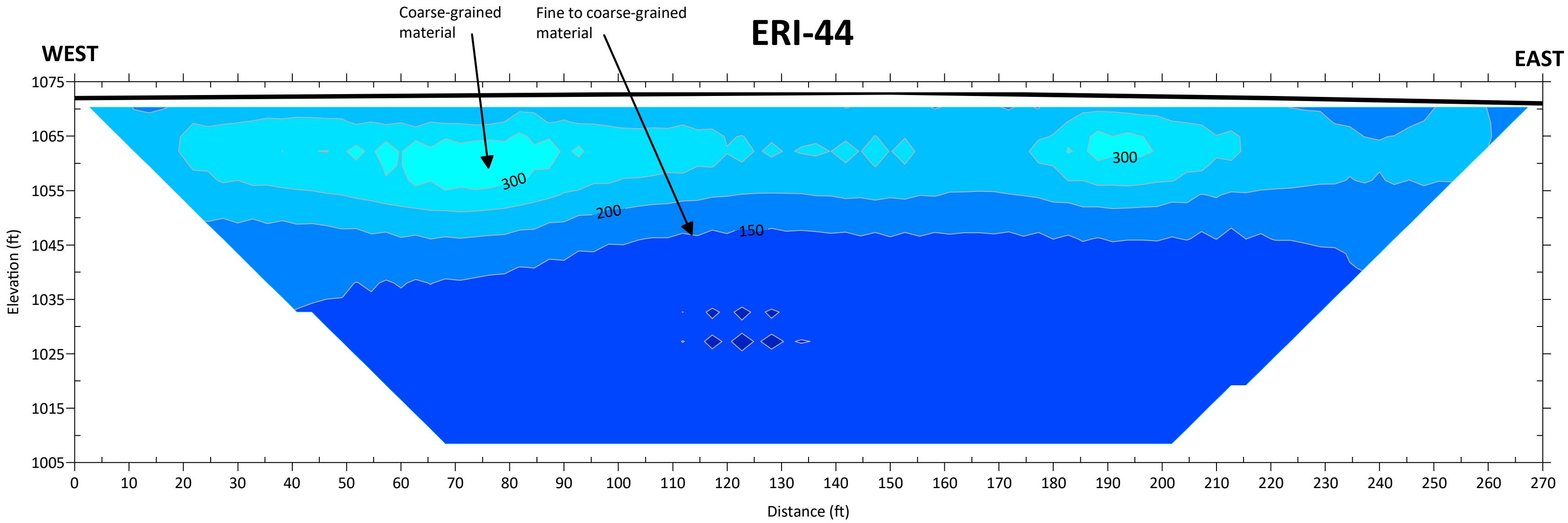
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-43)

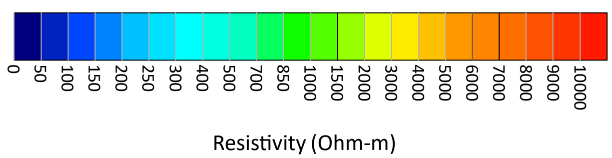
PREPARED FOR
Candela

PROJECT NO.

SHEET NO.
13 OF 36

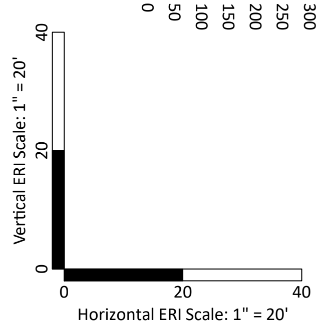
ERI-44





LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



NOTES: Geophysical data was acquired on September 19, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

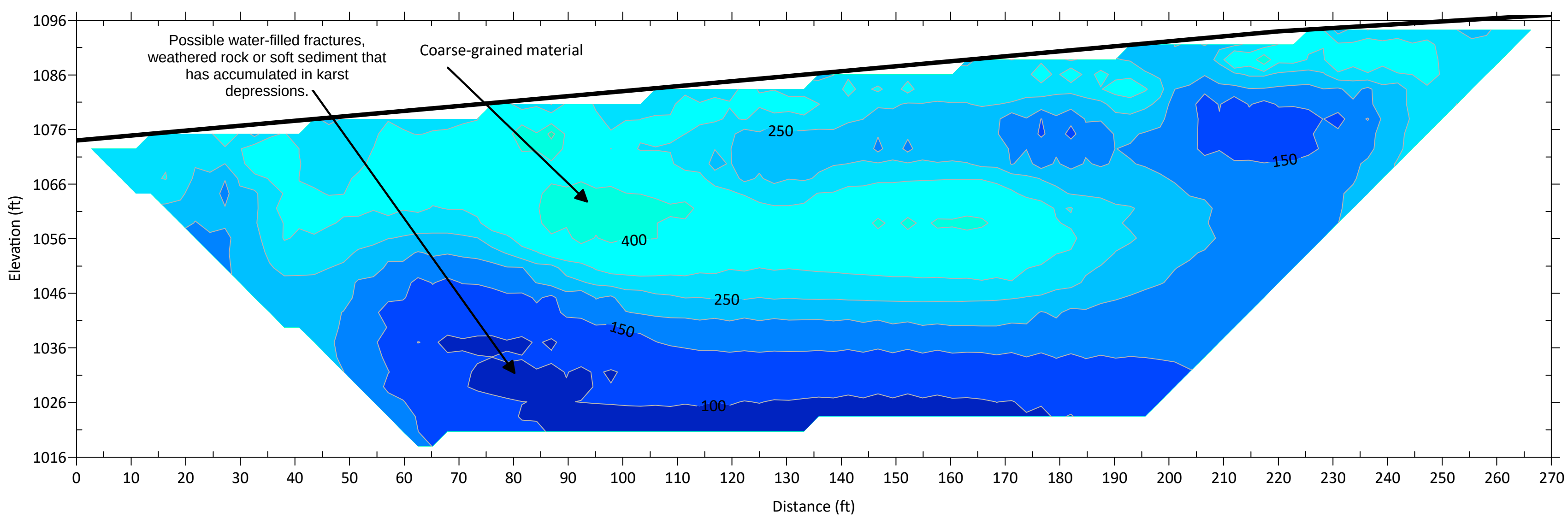
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-44)

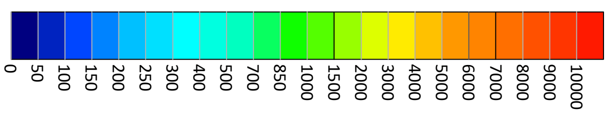
PREPARED FOR
Candela

PROJECT NO.

SHEET NO.
14 OF 36

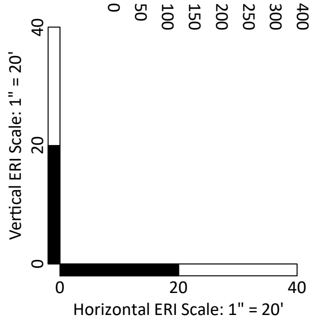
ERI-45





LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



NOTES: Geophysical data was acquired on September 19, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
**Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky**

SCALE:

SOURCE:
AGI EarthImager

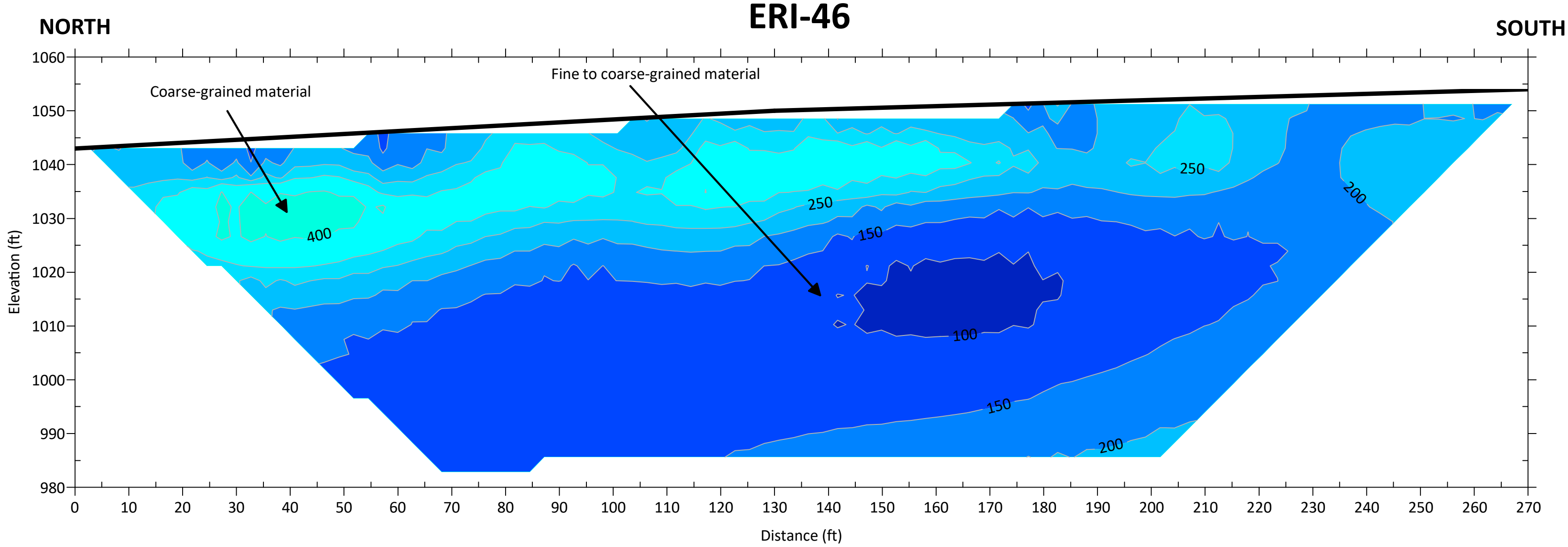
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-45)

PREPARED FOR
Candela

PROJECT NO.

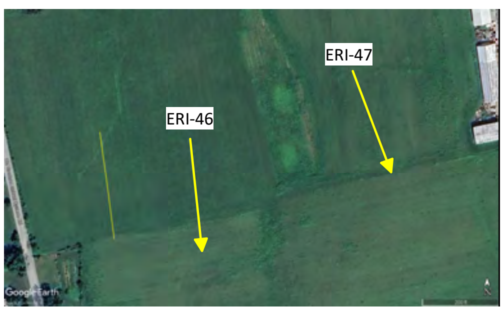
SHEET NO.
15 OF 36

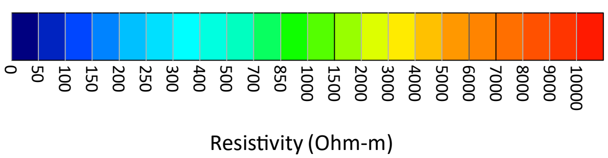
ERI-46

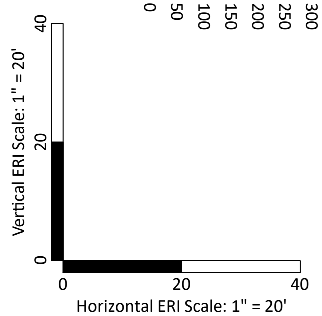


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data was acquired on September 19, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

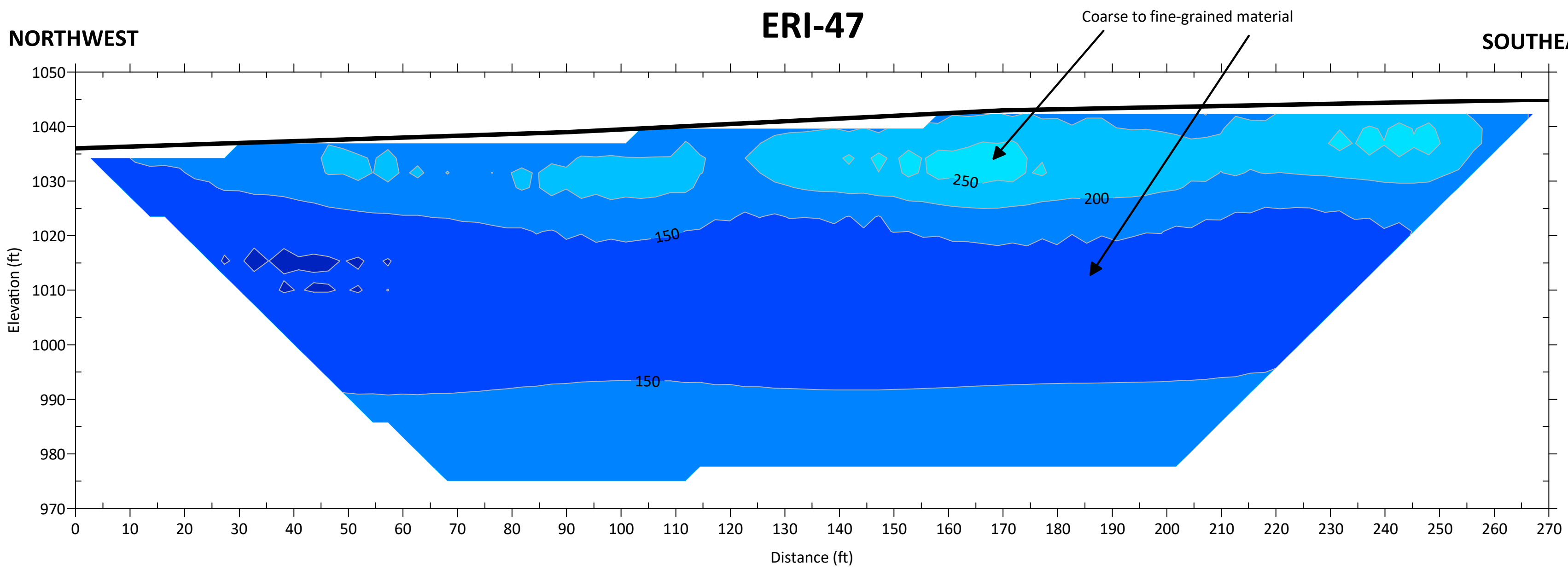
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-46)

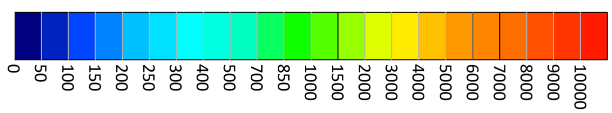
PREPARED FOR
Candela

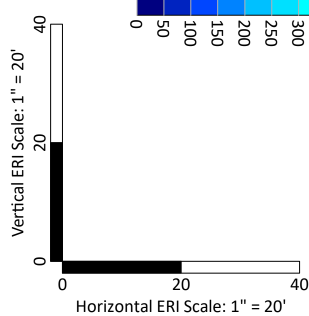
PROJECT NO.

SHEET NO.
16 OF 36

ERI-47







LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST

NOTES: Geophysical data was acquired on September 19, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

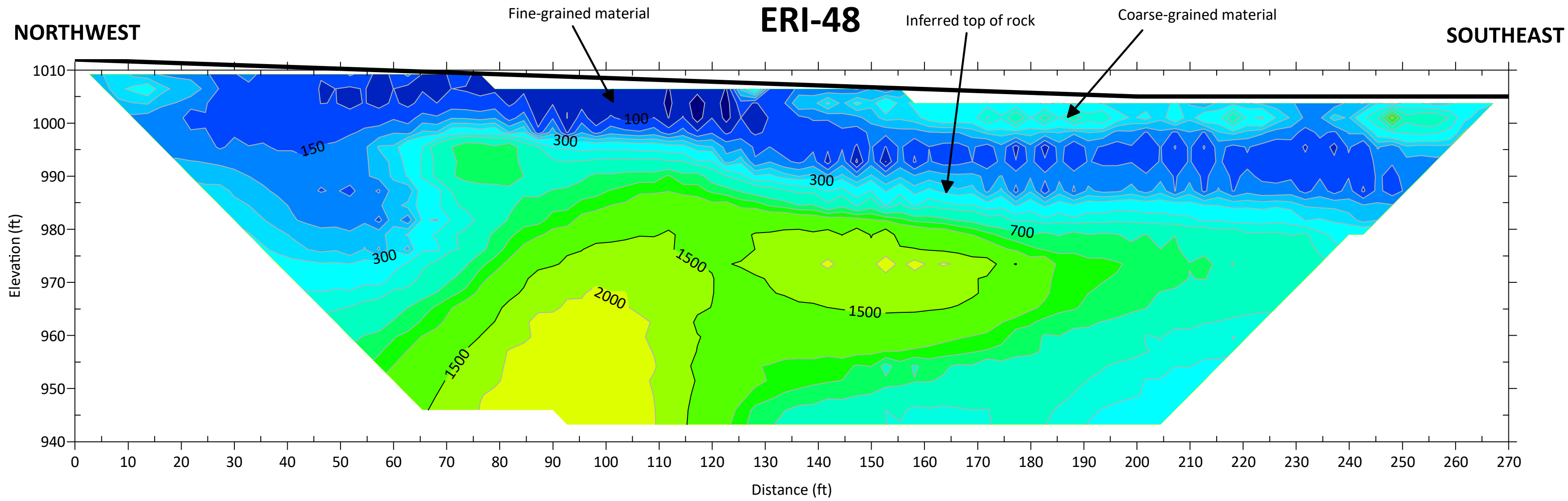
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-47)

PREPARED FOR
Candela

PROJECT NO.

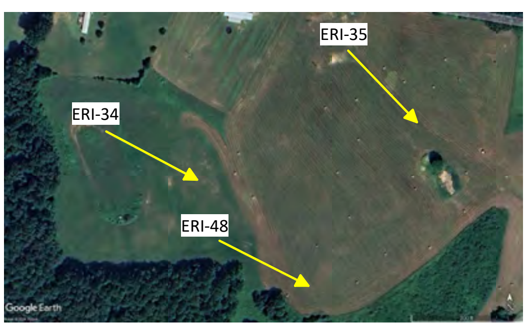
SHEET NO.
17 OF 36

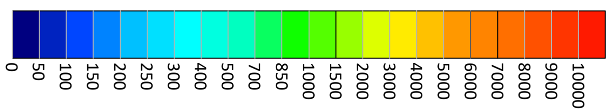
ERI-48

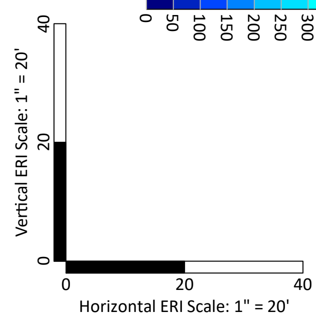


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data was acquired on September 19, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

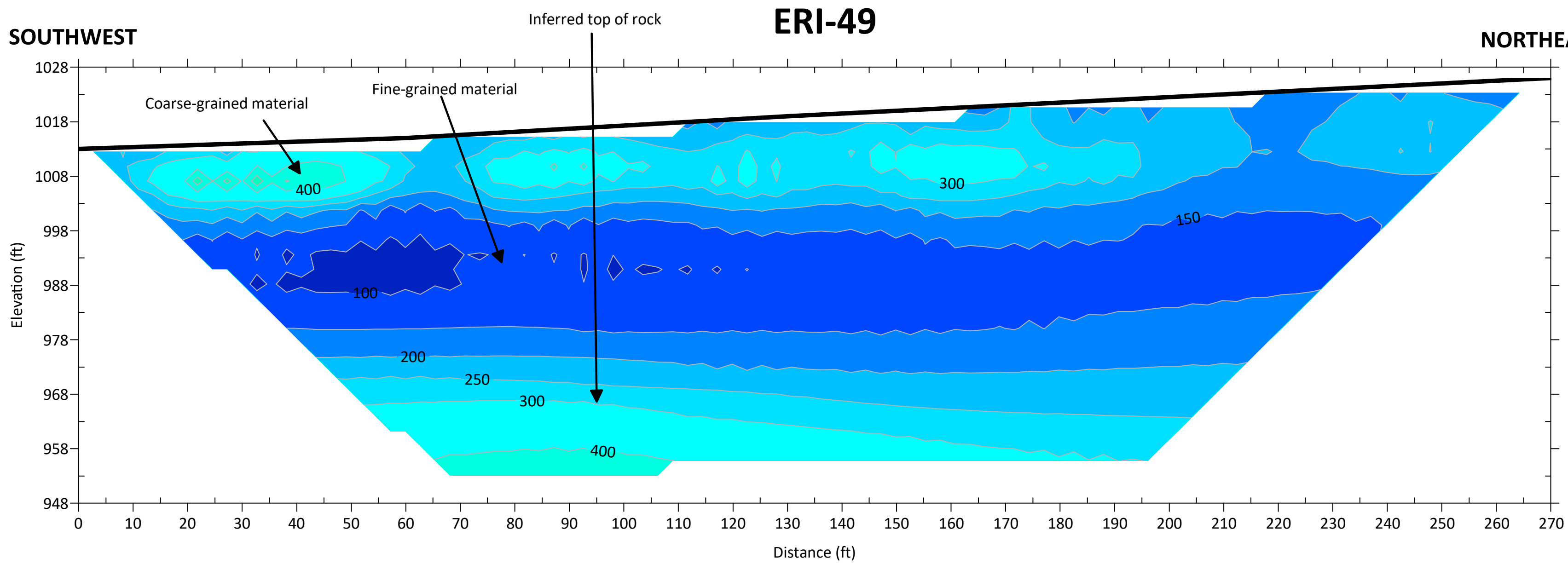
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-48)

PREPARED FOR
Candela

PROJECT NO.

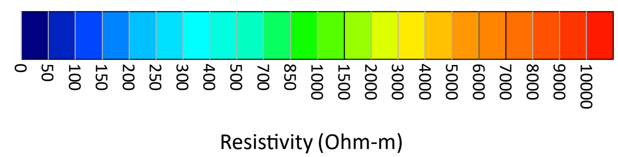
SHEET NO.
18 OF 36

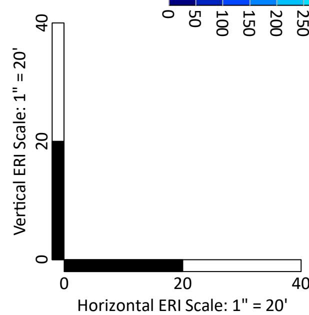
ERI-49



LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST





NOTES: Geophysical data was acquired on September 20, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

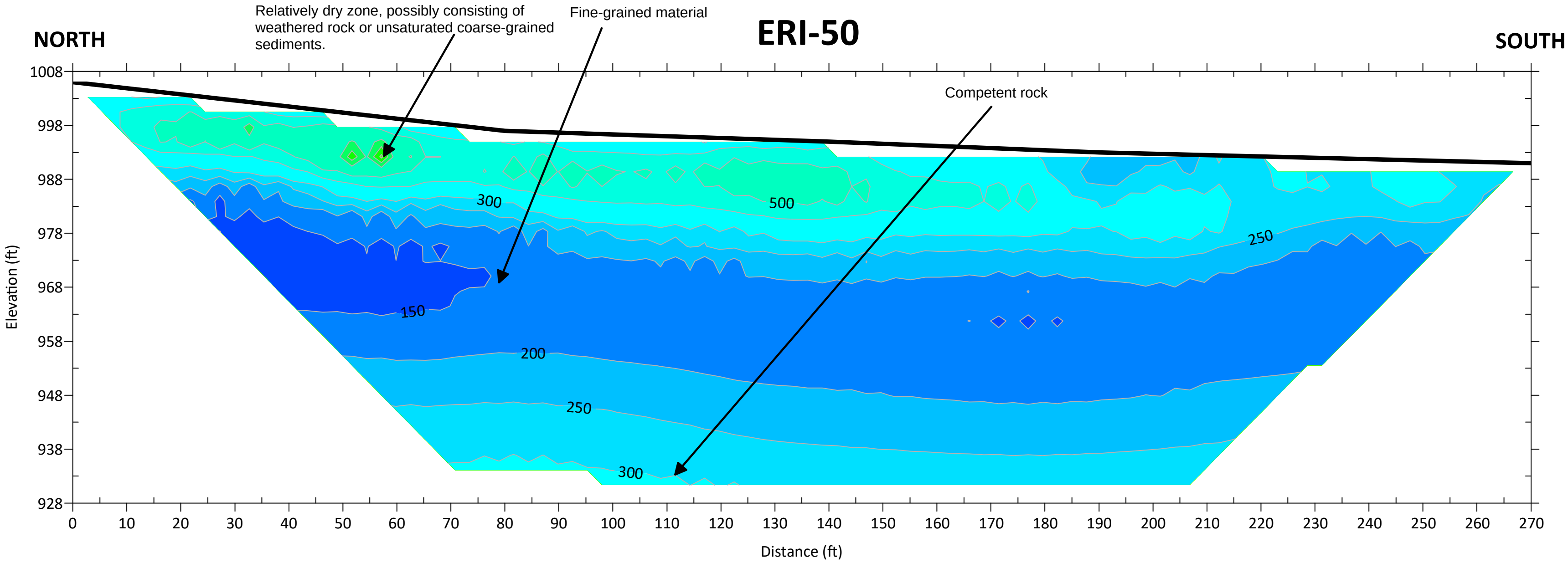
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-49)

PREPARED FOR
Candela

PROJECT NO.

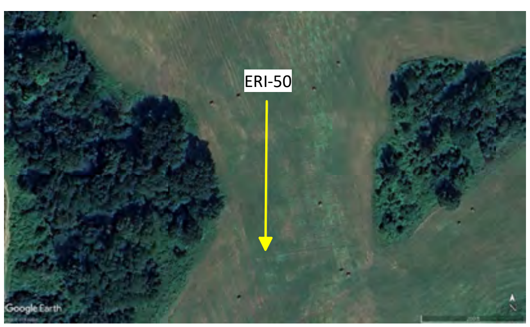
SHEET NO.
19 OF 36

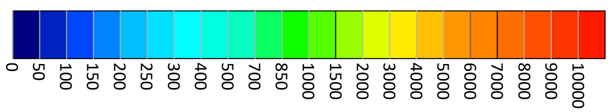
ERI-50



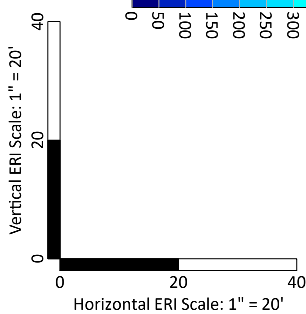
LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST





Resistivity (Ohm-m)



NOTES: Geophysical data was acquired on September 20, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:

Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

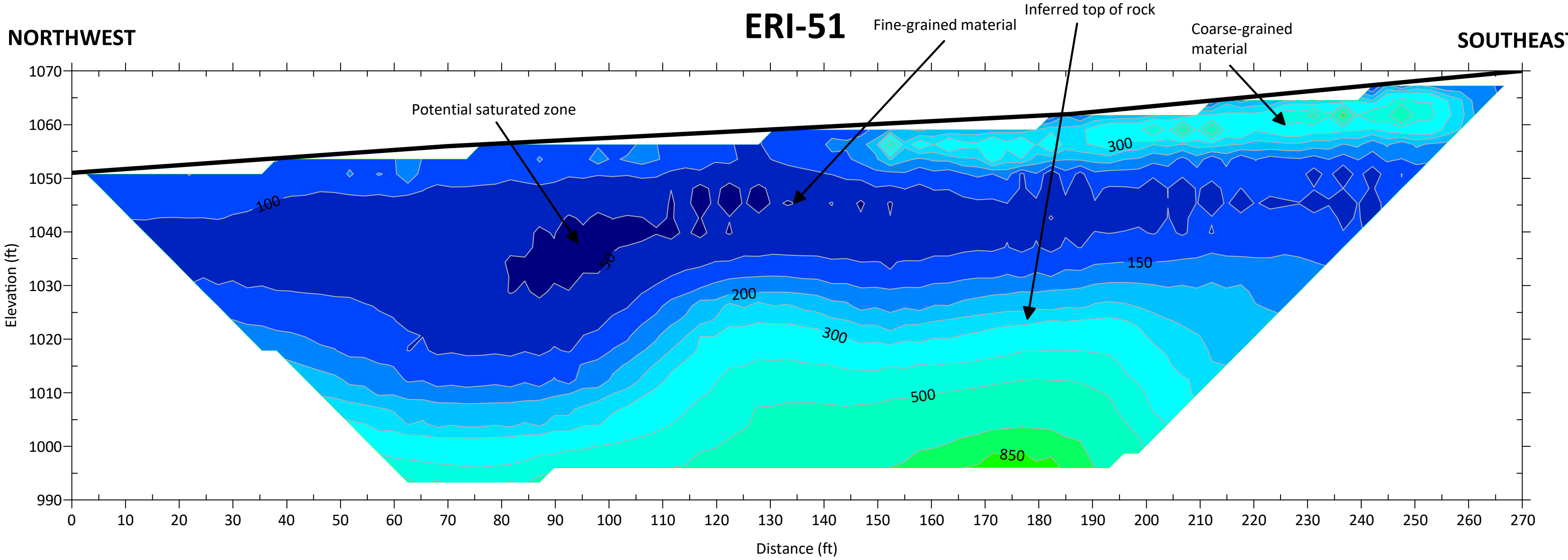
ATTACHMENT TITLE

Electrical Resistivity Imaging Profiles (ERI-50)

PREPARED FOR
Candela

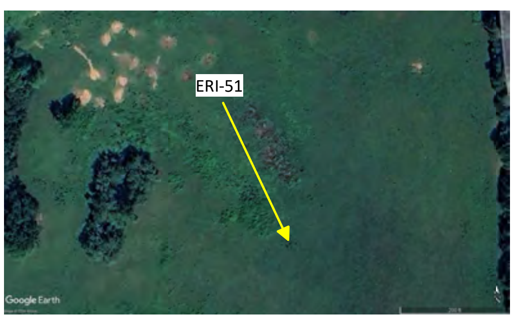
PROJECT NO.

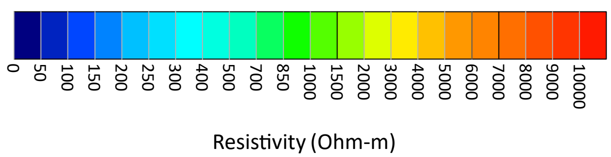
SHEET NO.
20 OF 36

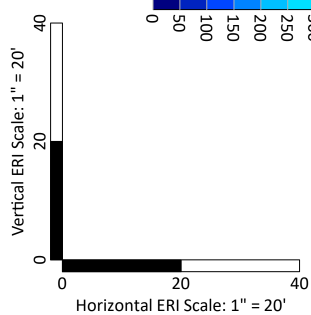


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data was acquired on September 20, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

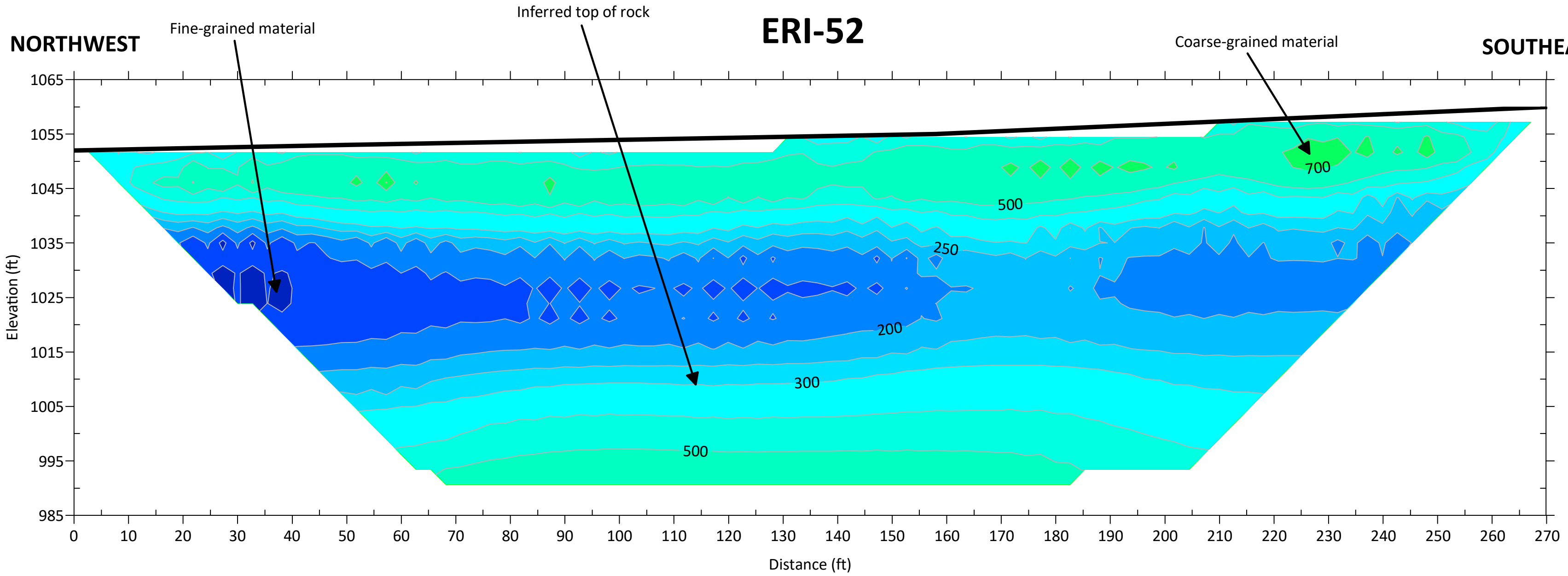
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-51)

PREPARED FOR
Candela

PROJECT NO.

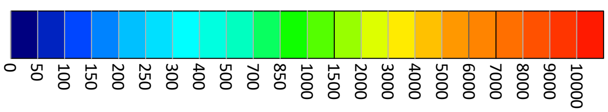
SHEET NO.
21 OF 36

ERI-52

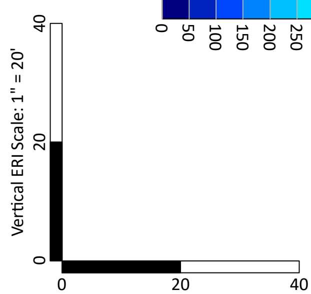


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



Resistivity (Ohm-m)



Horizontal ERI Scale: 1" = 20'

NOTES: Geophysical data was acquired on September 20, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

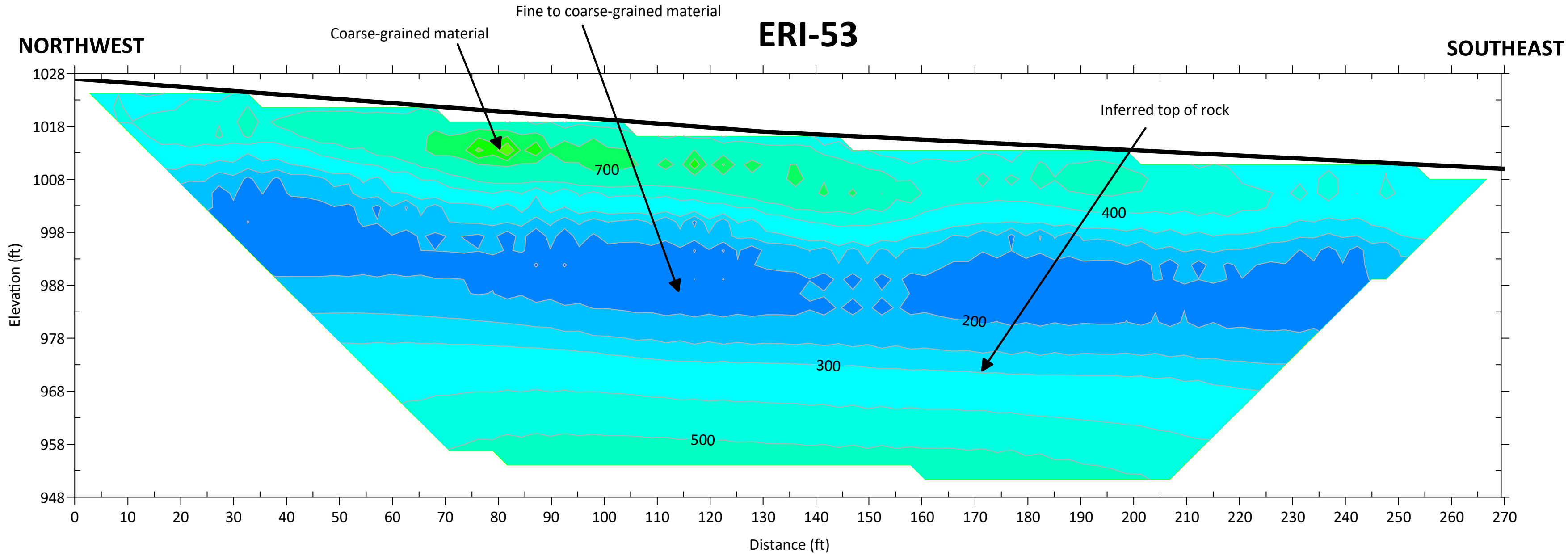
SOURCE:
AGI EarthImager

ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-52)

PREPARED FOR
Candela

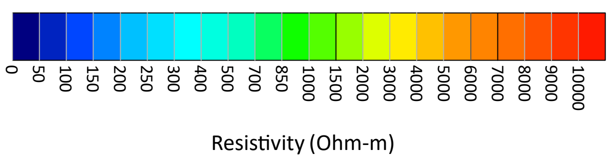
PROJECT NO.

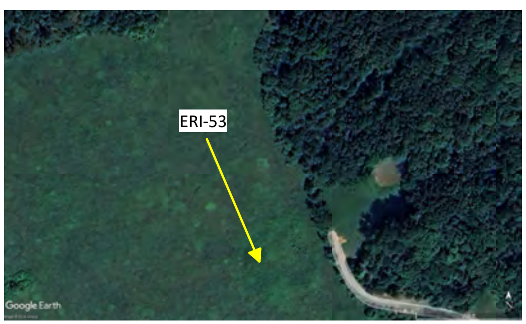
SHEET NO.
22 OF 36

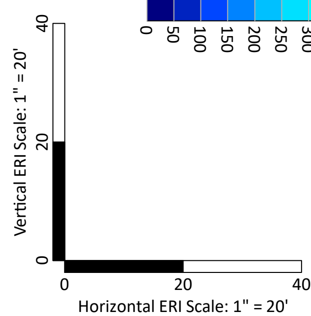


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data was acquired on September 20, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

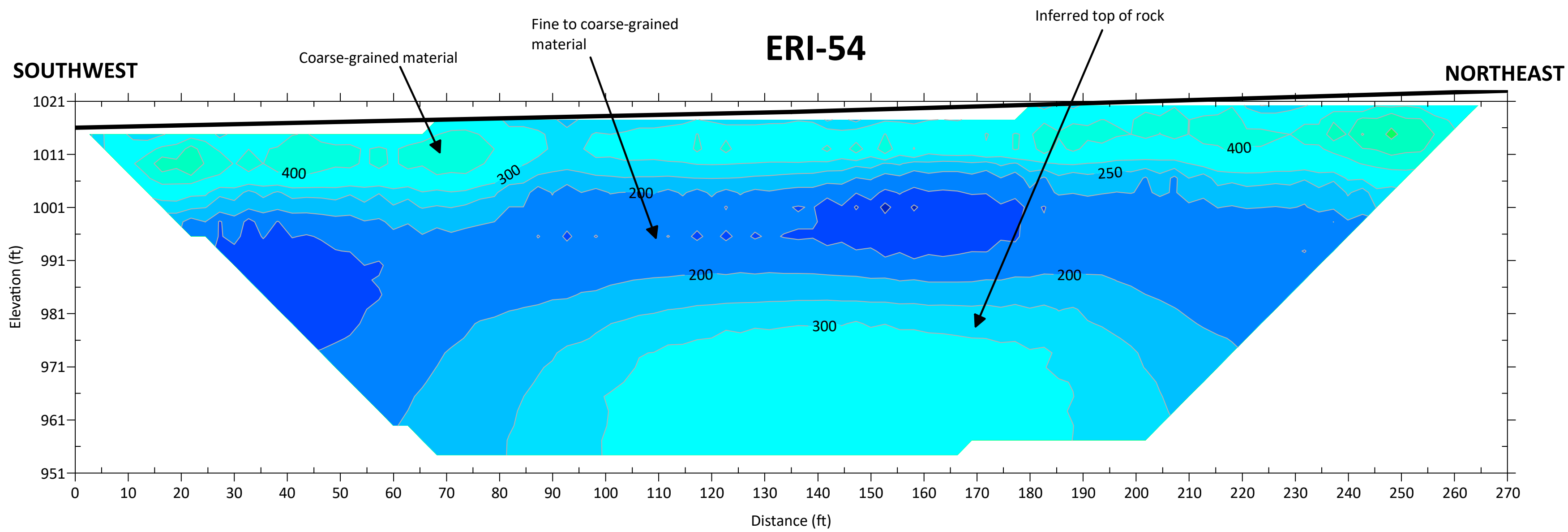
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-53)

PREPARED FOR
Candela

PROJECT NO.

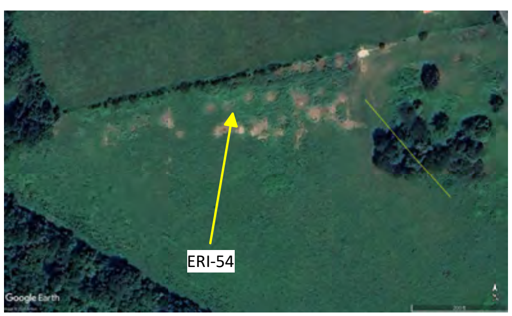
SHEET NO.
23 OF 36

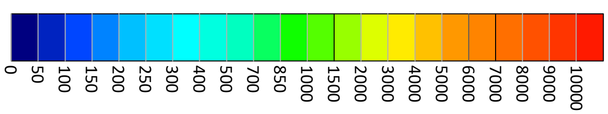
ERI-54



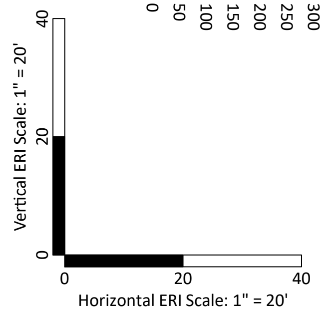
LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST





Resistivity (Ohm-m)



NOTES: Geophysical data was acquired on September 20, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN ZAA 10/02/2024
DES
CHK
REV
PROJ. MGR

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

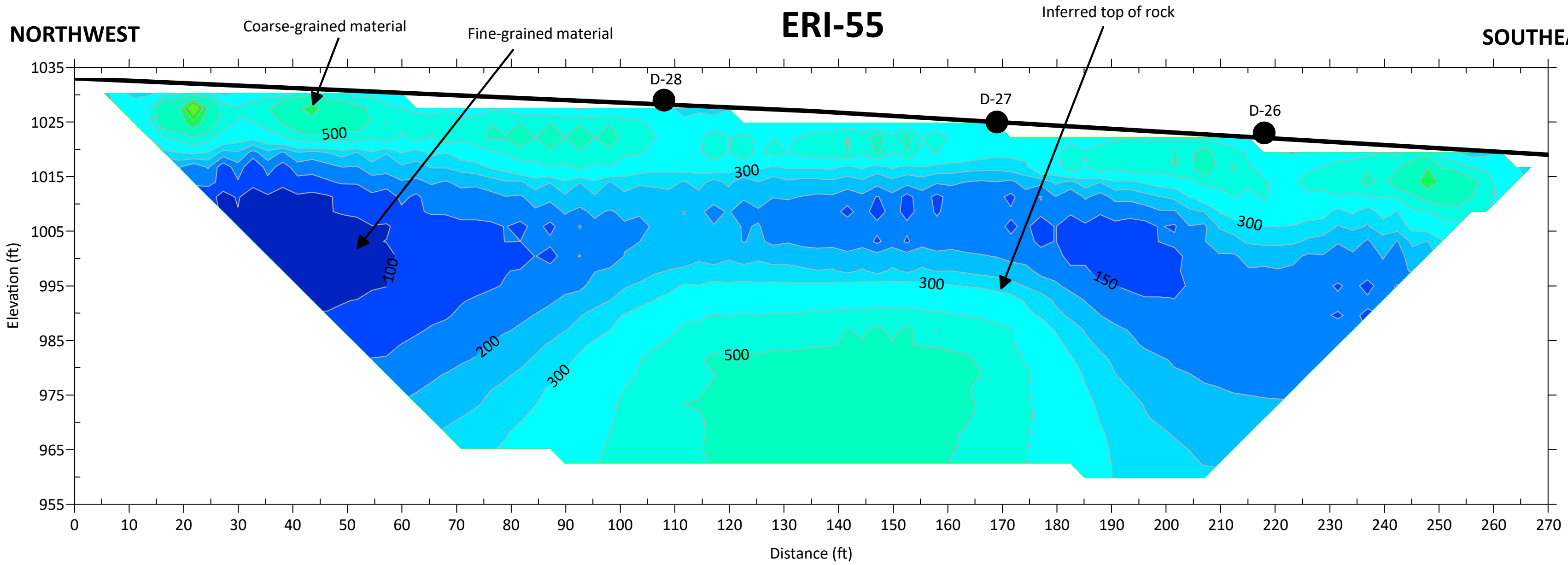
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-54)

PREPARED FOR
Candela

PROJECT NO.

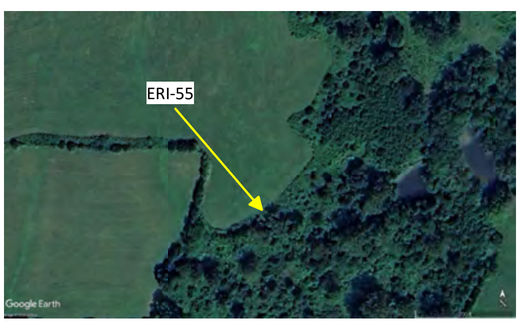
SHEET NO.
24 OF 36

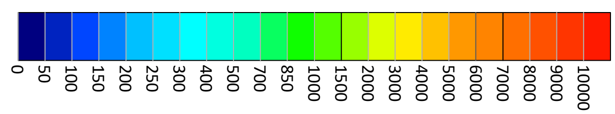
ERI-55

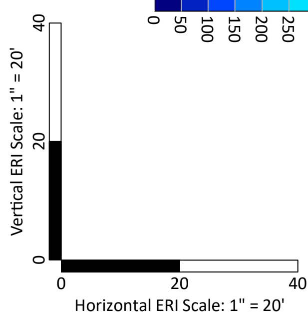


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data was acquired on September 20, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR.		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

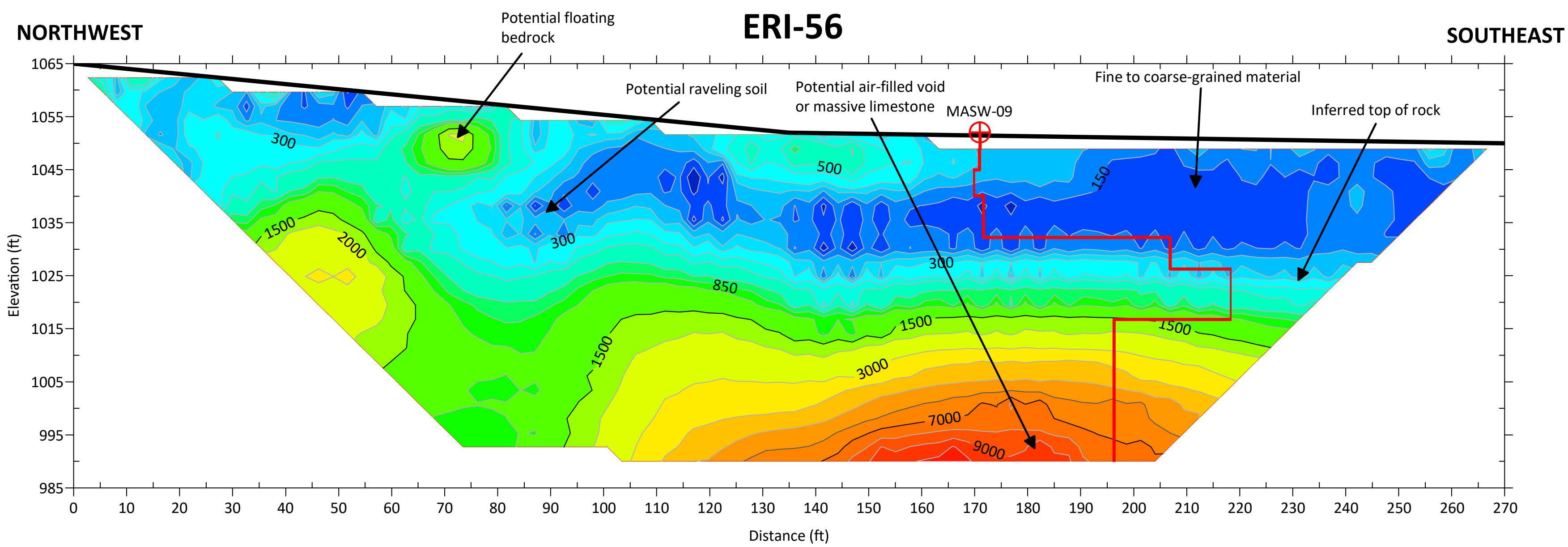
SOURCE:
AGI EarthImager

ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-55)

PREPARED FOR
Candela

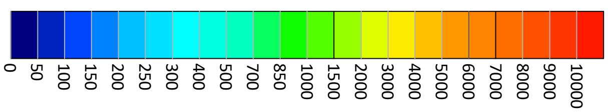
PROJECT NO.

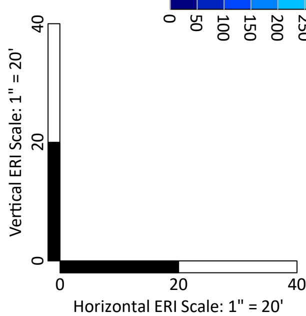
SHEET NO.
25 OF 36



LEGEND

- ● OBSERVED KARST FEATURE
- ⊕ COMPLETED MASW TEST





NOTES: Geophysical data was acquired on September 21, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
**Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky**

SCALE:

SOURCE: AGI EarthImager

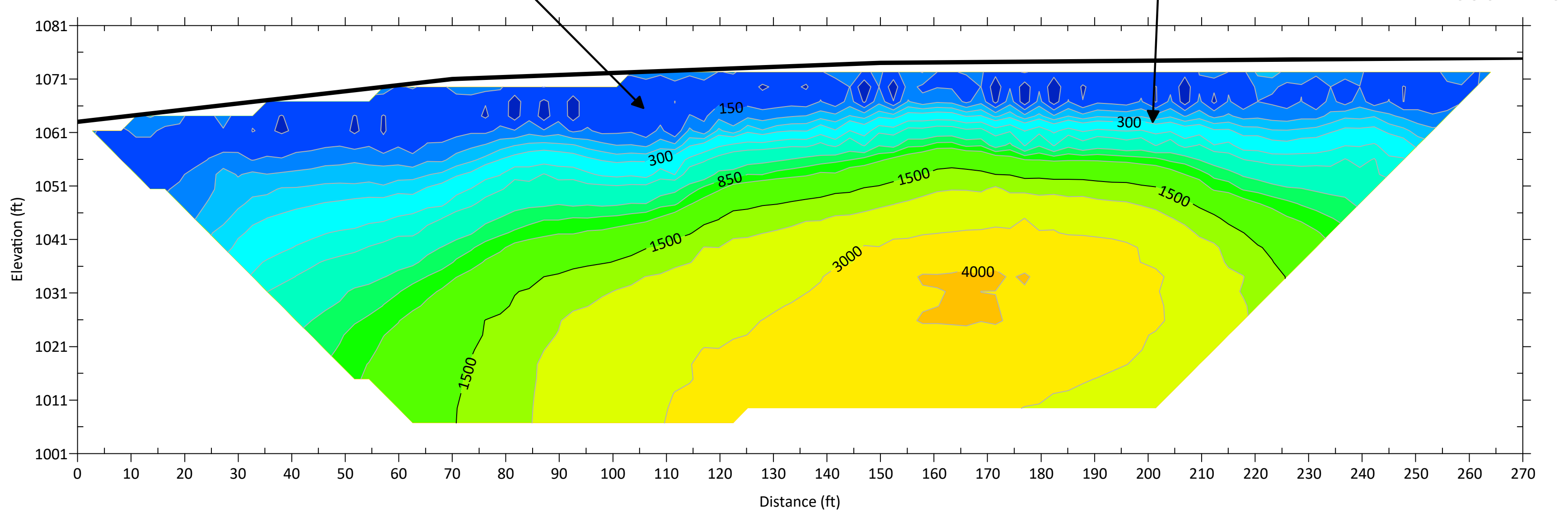
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-56)

PREPARED FOR: Candela

PROJECT NO.

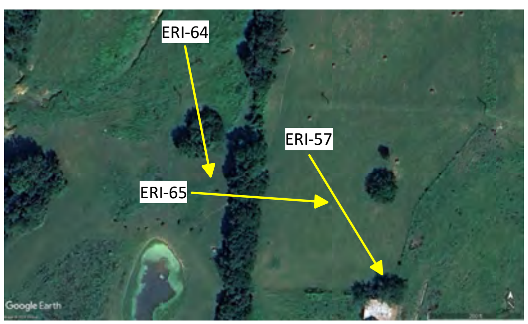
SHEET NO. **26 OF 36**

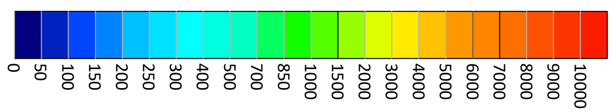
ERI-57

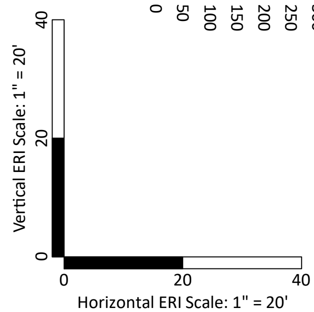


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data was acquired on September 21, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

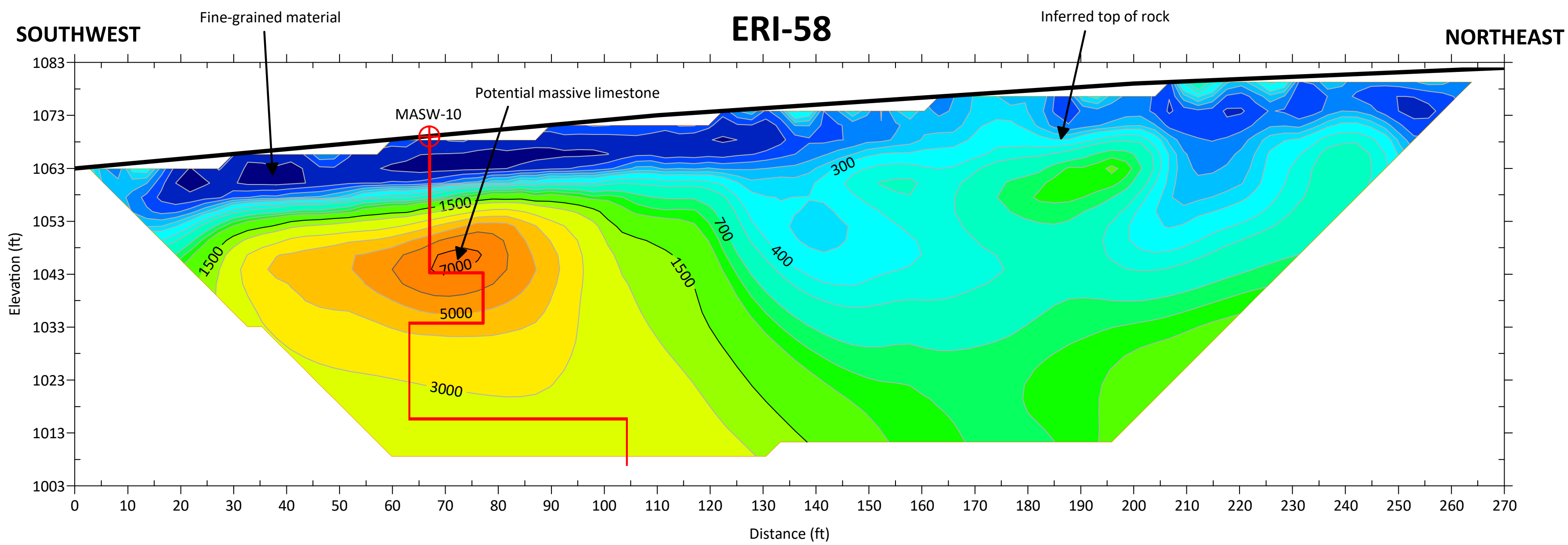
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-57)

PREPARED FOR
Candela

PROJECT NO.

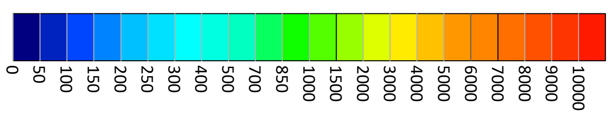
SHEET NO.
27 OF 36

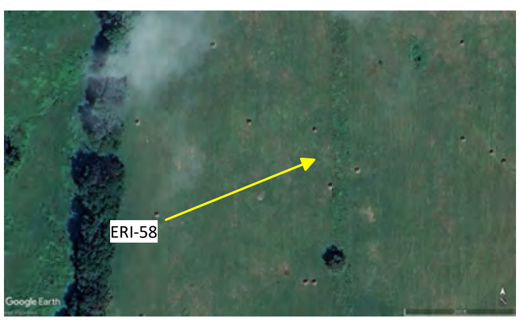
ERI-58

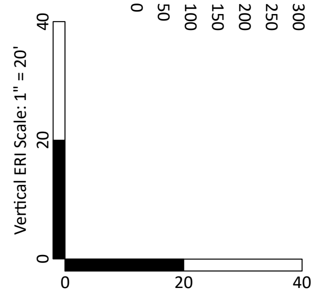


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data was acquired on September 21, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:

Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE: AGI EarthImager

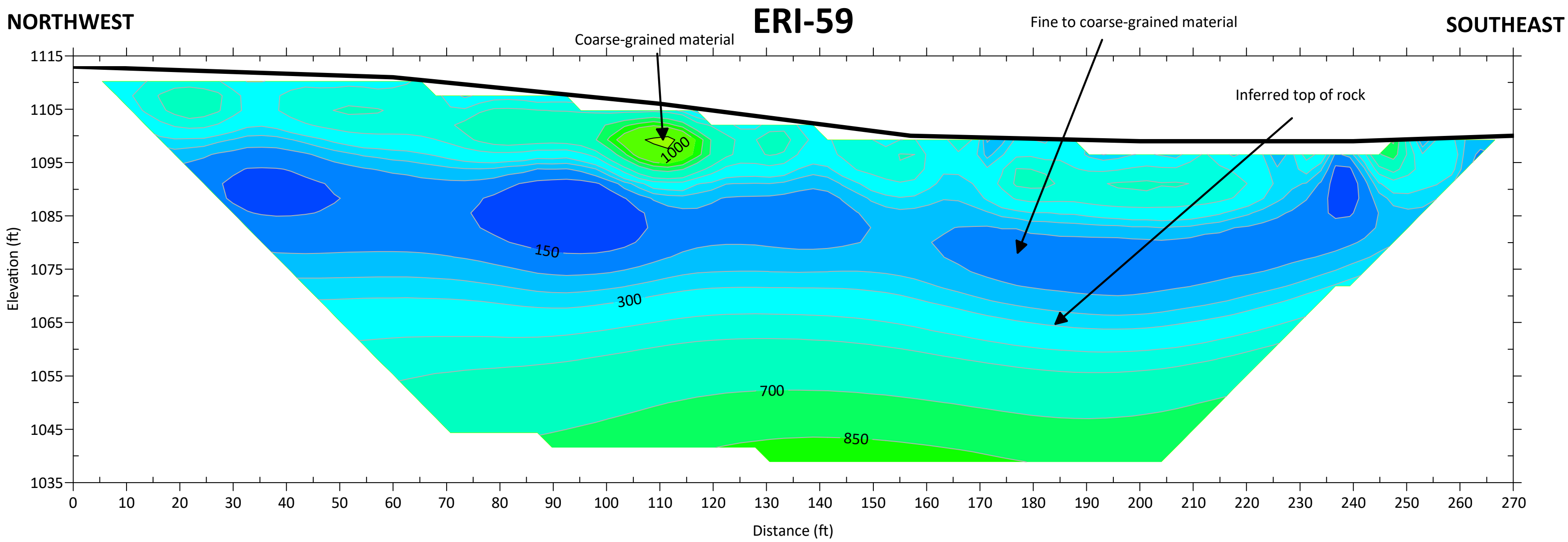
ATTACHMENT TITLE

Electrical Resistivity Imaging Profiles (ERI-58)

PREPARED FOR: Candela

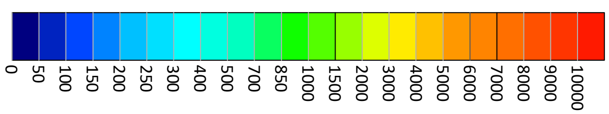
PROJECT NO.

SHEET NO. **28 OF 36**

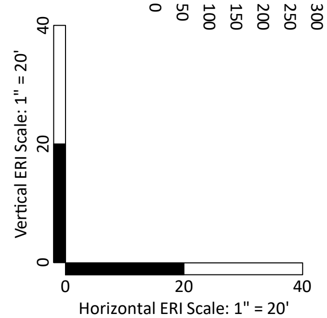


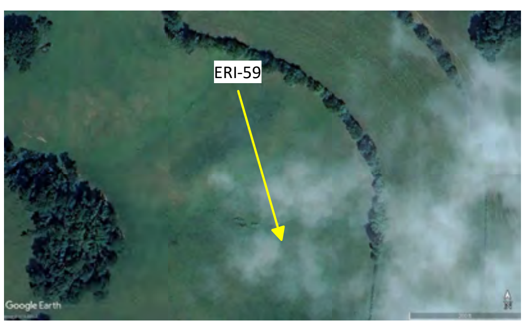
LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



Resistivity (Ohm-m)





NOTES: Geophysical data was acquired on September 21, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

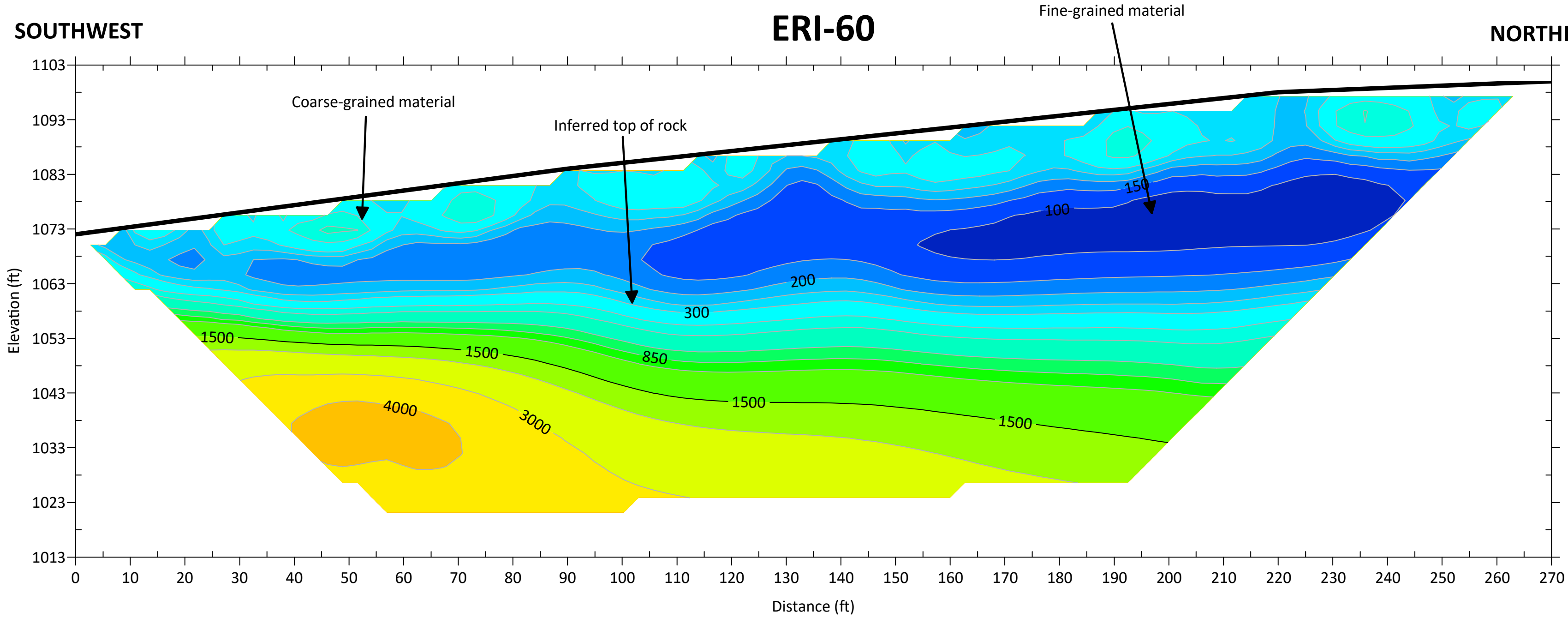
SOURCE:
AGI EarthImager

ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles
(ERI-59)

PREPARED FOR
Candela

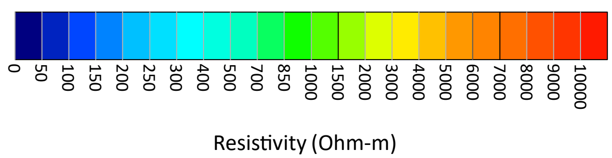
PROJECT NO.

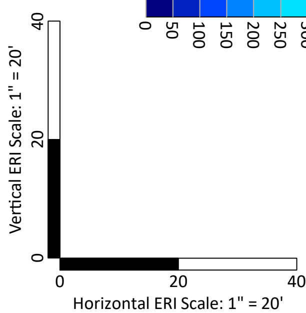
SHEET NO.
29 OF 36

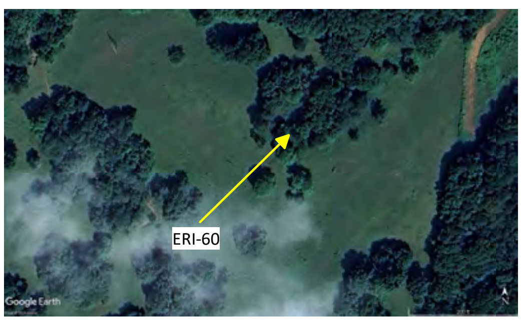


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data was acquired on September 21, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:

Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE: AGI EarthImager

ATTACHMENT TITLE

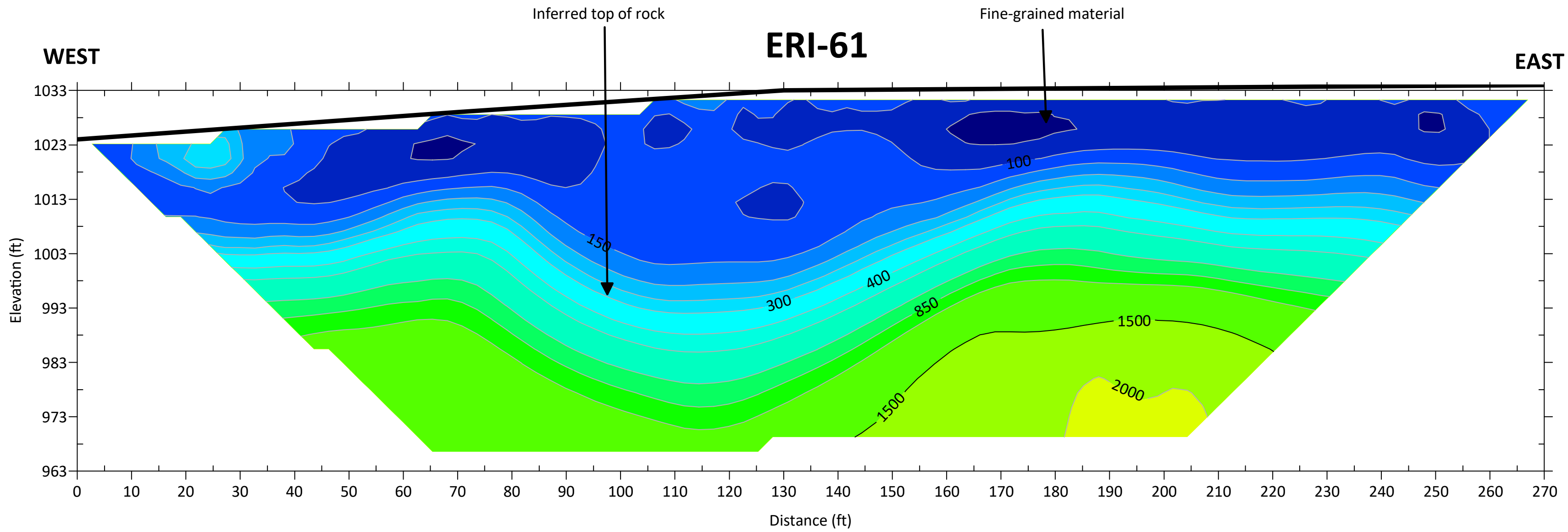
Electrical Resistivity Imaging Profiles (ERI-60)

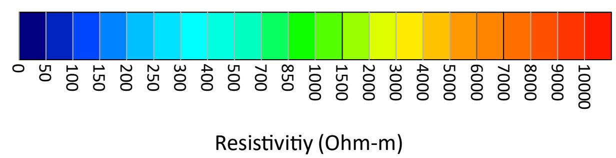
PREPARED FOR: Candela

PROJECT NO.

SHEET NO. 30 OF 36

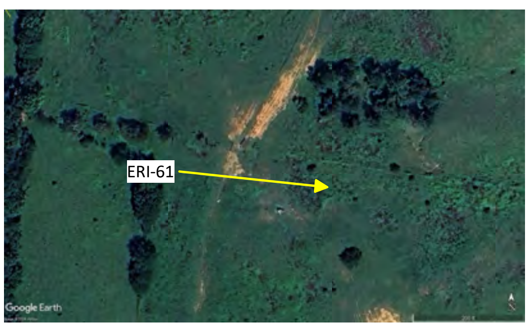
ERI-61

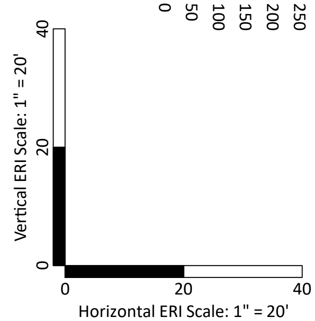




LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST





NOTES: Geophysical data was acquired on September 22, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

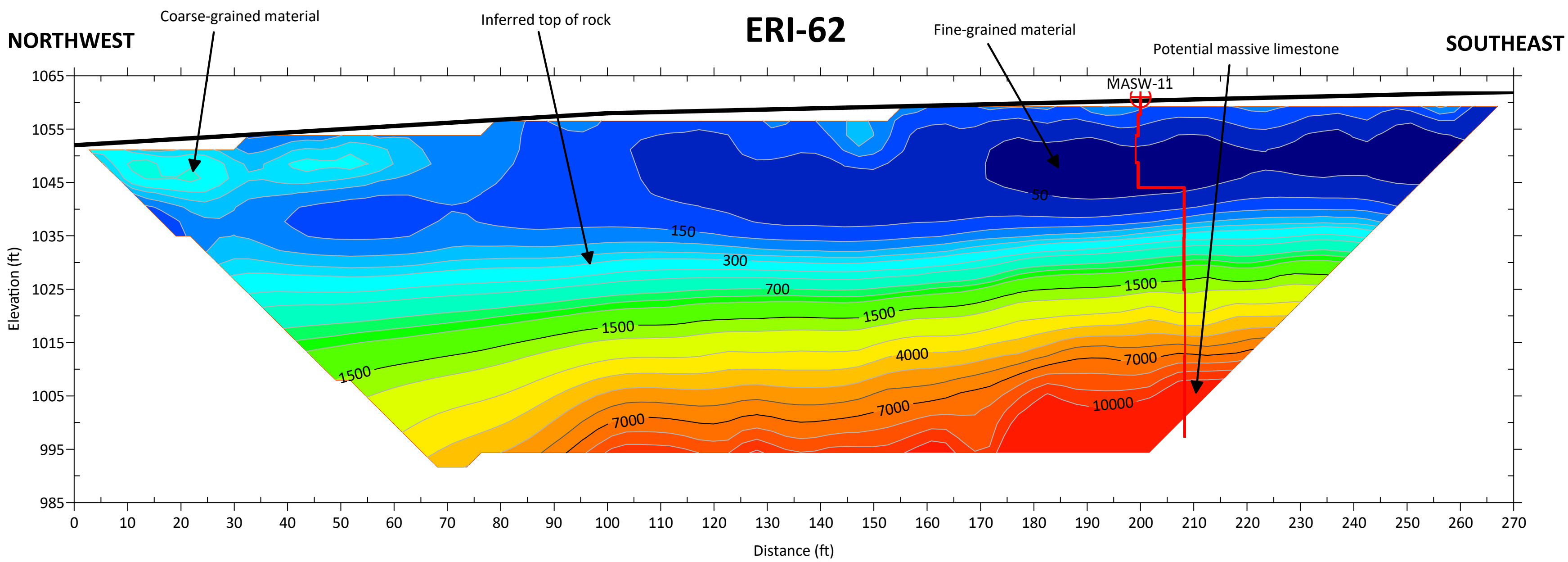
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-61)

PREPARED FOR
Candela

PROJECT NO.

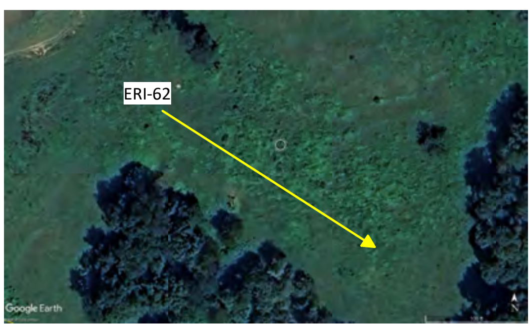
SHEET NO.
31 OF 36

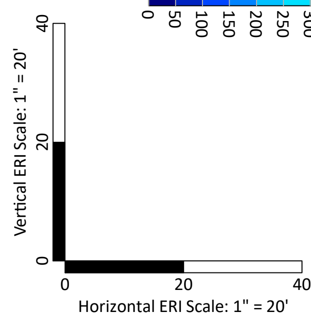
ERI-62

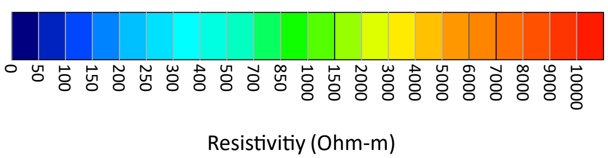


LEGEND

- ● OBSERVED KARST FEATURE
- ⊕ COMPLETED MASW TEST







NOTES: Geophysical data was acquired on September 22, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT: Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE: AGI EarthImager

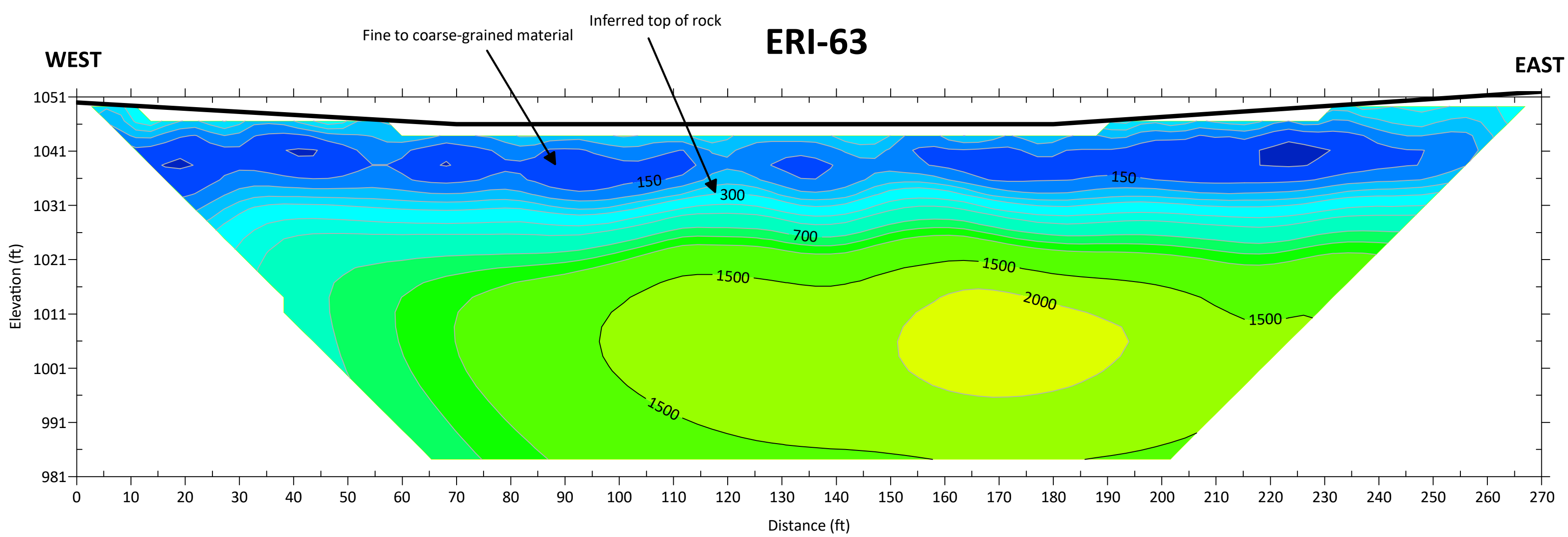
ATTACHMENT TITLE: Electrical Resistivity Imaging Profiles (ERI-62)

PREPARED FOR: Candela

PROJECT NO.

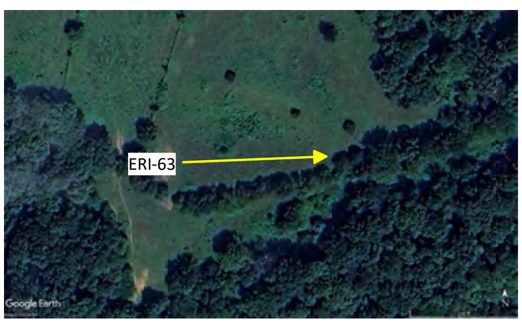
SHEET NO. 32 OF 36

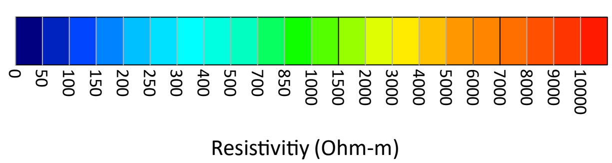
ERI-63

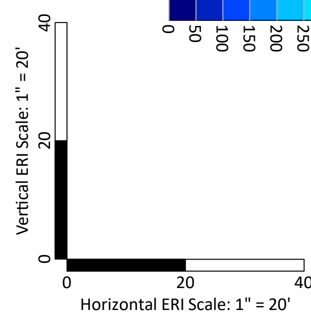


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data was acquired on September 22, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

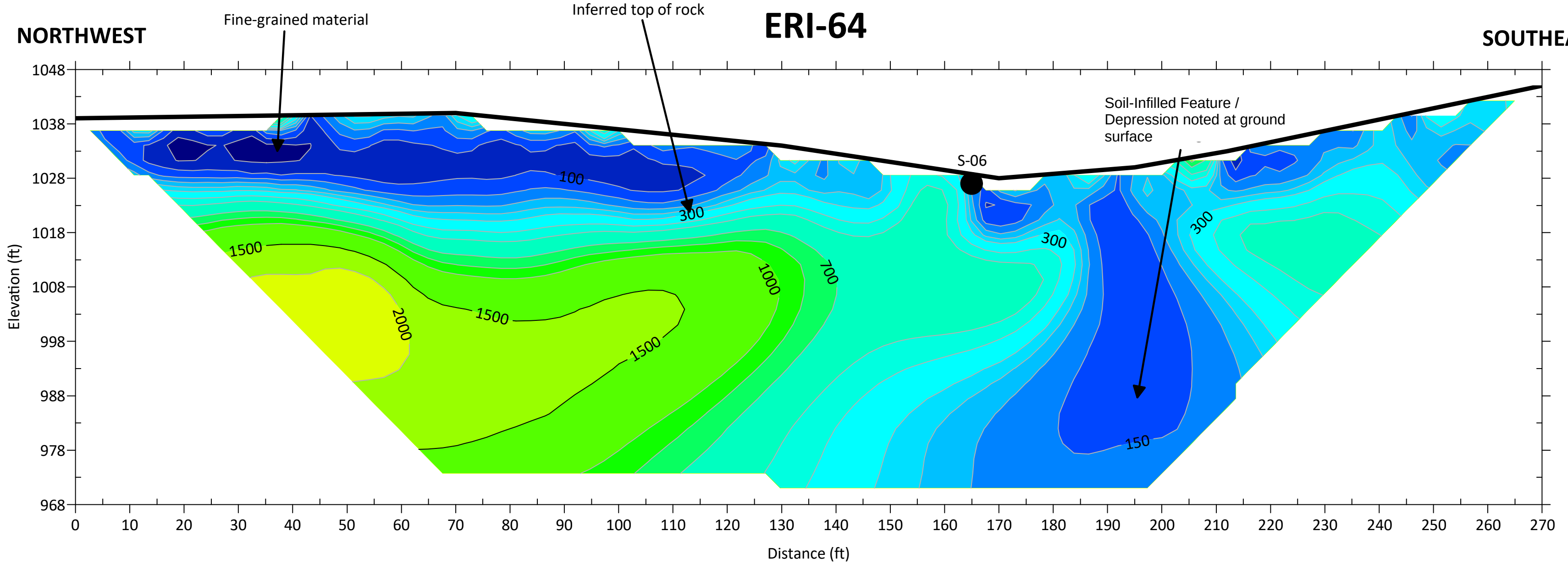
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles
(ERI-63)

PREPARED FOR
Candela

PROJECT NO.

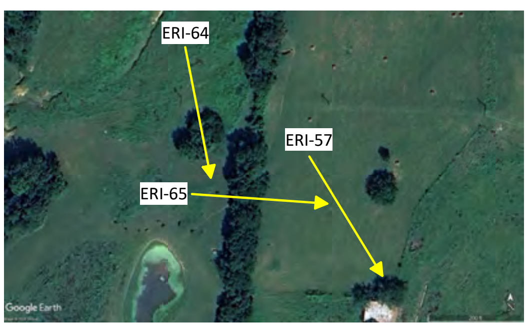
SHEET NO.
33 OF 36

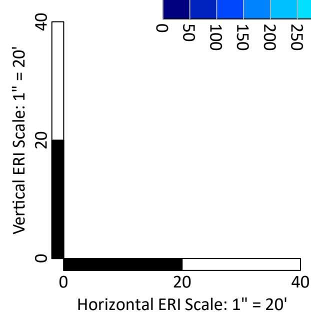
ERI-64

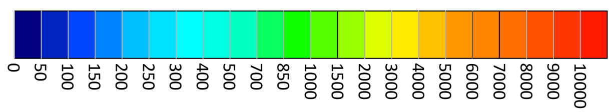


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







Resistivitiy (Ohm-m)

NOTES: Geophysical data was acquired on September 22, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-64)

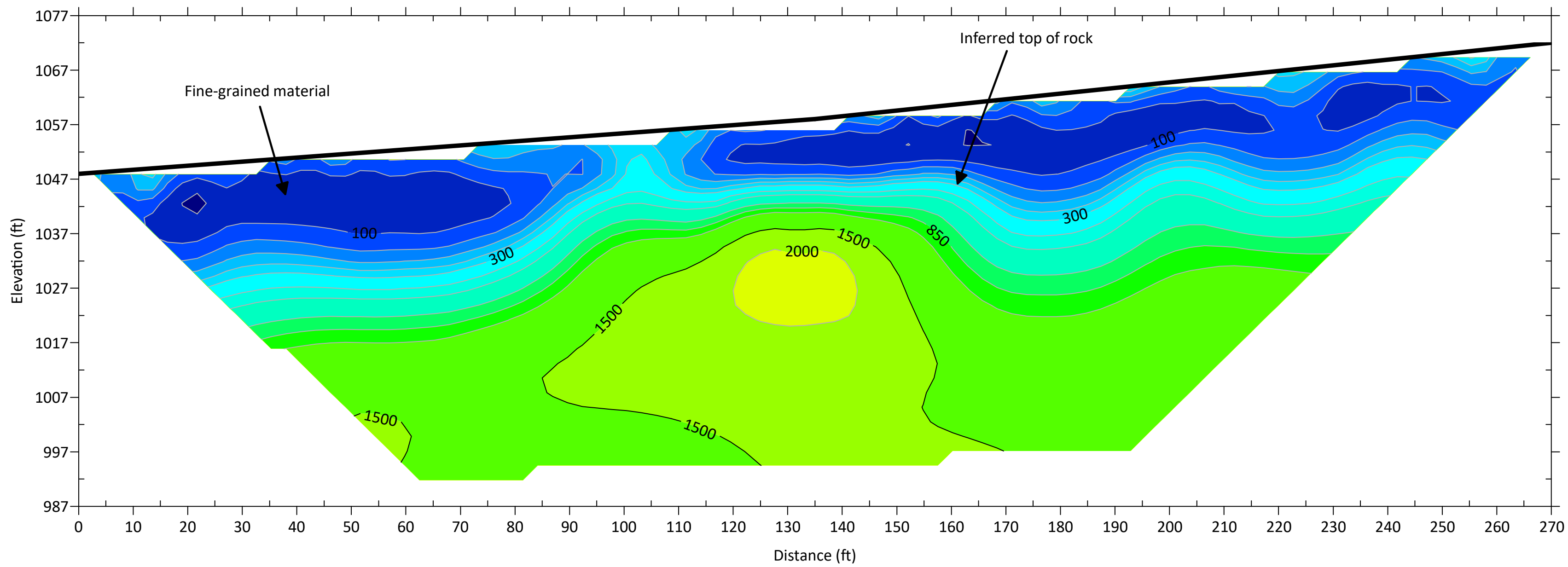
PREPARED FOR
Candela

PROJECT NO.

SHEET NO.
34 OF 36

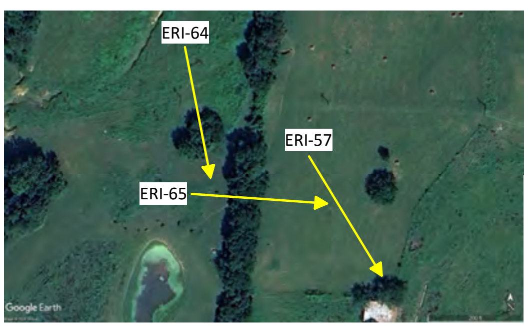
ERI-65

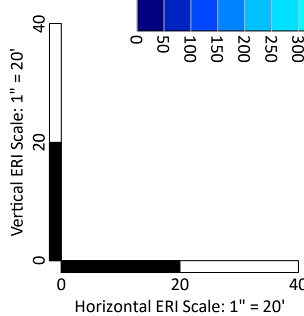
WEST | EAST

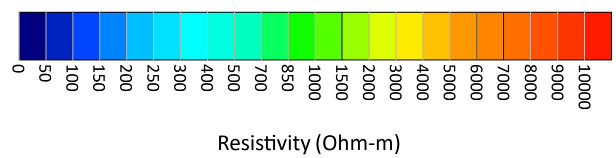


LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST







NOTES: Geophysical data was acquired on September 24, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

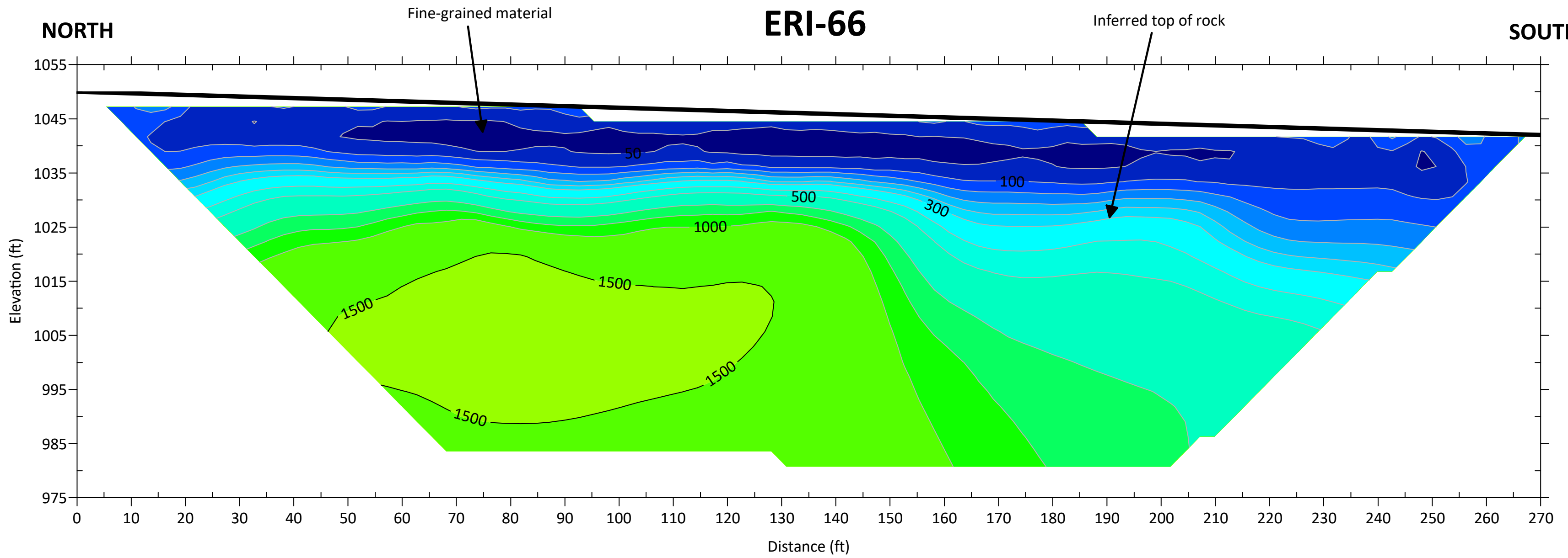
ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-65)

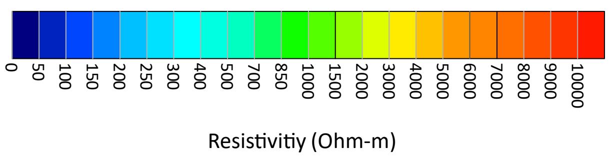
PREPARED FOR
Candela

PROJECT NO.

SHEET NO.
35 OF 36

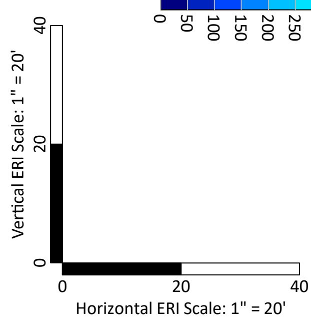
ERI-66





LEGEND

- OBSERVED KARST FEATURE
- COMPLETED MASW TEST



NOTES: Geophysical data was acquired on September 24, 2024 using an AGI SuperSting R8 electrical resistivity meter utilizing 28 electrodes at 10-foot spacings. Data were processed using EarthImager 2D inversion software. No vertical exaggeration. Real-time positioning data were acquired with a Trimble Geo-7X global positioning system. Locations are approximate.

ANS GEO
4405 S Clinton Ave
South Plainfield, NJ 07080
(908) 754-8800
www.ansgeo.com

DRN	ZAA	10/02/2024
DES		
CHK		
REV		
PROJ. MGR		

PROJECT:
Geophysical Investigation
Summer Shade Solar Project
Metcalfe & Monroe Counties, Kentucky

SCALE:

SOURCE:
AGI EarthImager

ATTACHMENT TITLE
Electrical Resistivity Imaging Profiles (ERI-66)

PREPARED FOR
Candela

PROJECT NO.

SHEET NO.
36 OF 36

Attachment D-1

Multichannel Analysis of Surface Waves (MASW) Profiles – Phase I

MASW Results – Summer Shade (MASW-01)

1-D Vs Profile

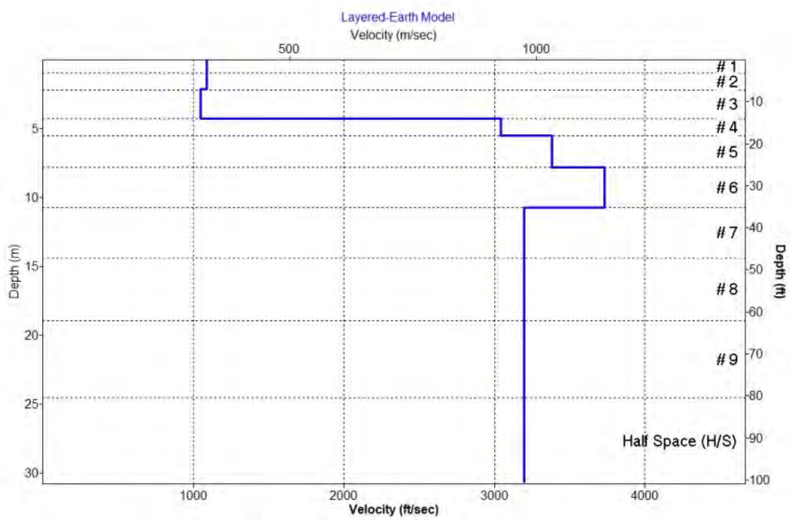


Table of Vs Values

Layer No.	Depth (ft)	Final Vs (ft/s)	Final Vp (ft/s)
1	3.1	**1090.78**	**7034.67**
2	7.0	**1090.78**	**7034.67**
3	13.9	**1048.33**	**6760.86**
4	18.0	**3044.11**	**12202.14**
5	25.7	**3382.98**	**13560.48**
6	35.2	**3734.65**	**14970.12**
7	47.2	**3195.65**	**12809.58**
8	62.1	**3195.65**	**12809.58**
9	80.7	**3195.65**	**12809.58**
10	**Halfspace**	**3195.65**	**12809.58**

Depth to Half Space (ft)	**80.7**
Number of Layers	10
Seismic Site Classification (Vs30)	**N/A**

MASW Results – Summer Shade (MASW-02)

1-D Vs Profile

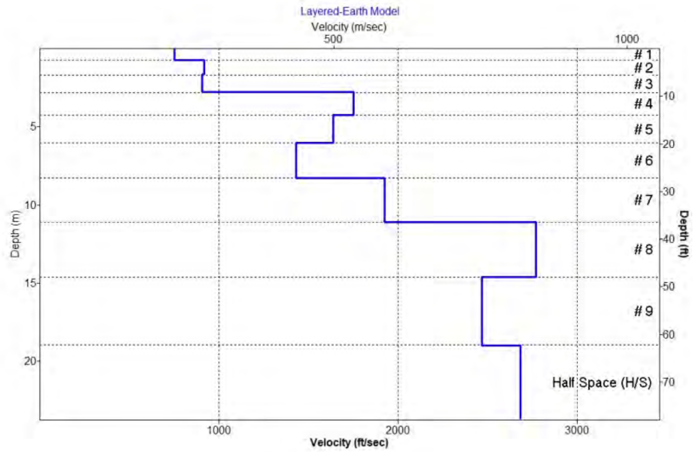


Table of Vs Values

Layer No.	Depth (ft)	Final Vs (ft/s)	Final Vp (ft/s)
1	2.4	**749.77**	**1600.23**
2	5.4	**915.78**	**1954.54**
3	9.1	**907.44**	**1936.74**
4	13.9	**1750.10**	**3329.77**
5	19.8	**1637.36**	**3115.27**
6	27.2	**1430.85**	**2722.35**
7	36.4	**1923.74**	**3660.13**
8	48.0	**2769.04**	**5268.41**
9	62.4	**2469.56**	**4698.62**
10	**Halfspace**	**2685.12**	**5108.75**

Depth to Half Space (ft)	**62.4**
Number of Layers	10
Seismic Site Classification (Vs30)	**N/A**

MASW Results – Summer Shade (MASW-03)

1-D Vs Profile

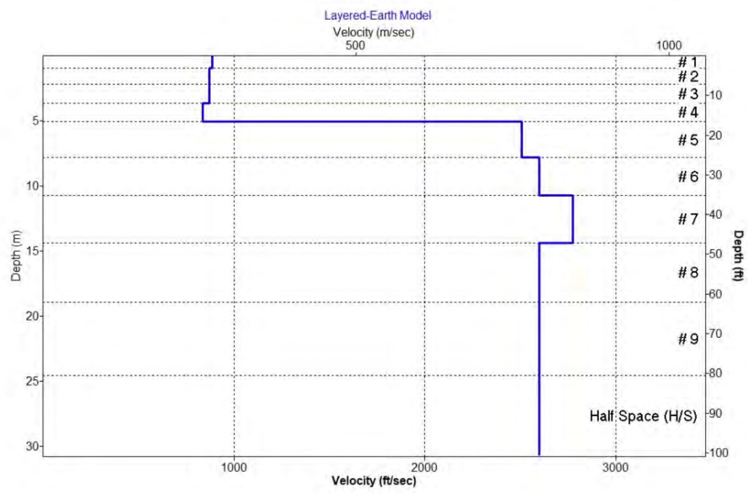


Table of Vs Values

Layer No.	Depth (ft)	Final Vs (ft/s)	Final Vp (ft/s)
1	3.1	**888.15**	**1895.57**
2	7.0	**873.47**	**1864.24**
3	11.9	**873.28**	**1863.83**
4	16.5	**836.02**	**1784.32**
5	25.7	**2507.50**	**4591.98**
6	35.2	**2598.88**	**4759.33**
7	47.2	**2777.16**	**5085.82**
8	62.1	**2598.88**	**4759.33**
9	80.7	**2598.88**	**4759.33**
10	**Halfspace**	**2598.88**	**4759.33**

Depth to Half Space (ft)	**80.7**
Number of Layers	10
Seismic Site Classification (Vs30)	**N/A**

MASW Results – Summer Shade (MASW-04)

1-D Vs Profile

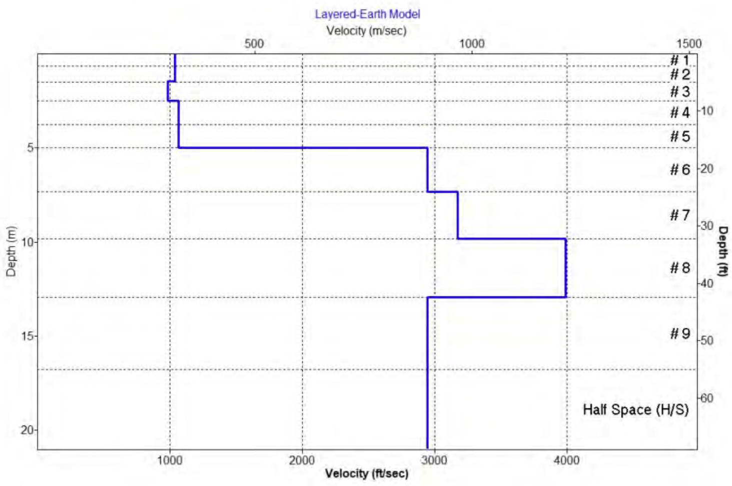


Table of Vs Values

Layer No.	Depth (ft)	Final Vs (ft/s)	Final Vp (ft/s)
1	2.1	**1038.28**	**2181.32**
2	4.8	**1038.28**	**2181.32**
3	8.2	**982.46**	**2064.05**
4	12.3	**1063.04**	**2233.34**
5	16.3	**1067.43**	**2242.56**
6	24.1	**2943.26**	**4824.37**
7	32.2	**3171.76**	**5198.91**
8	42.4	**3985.40**	**6532.56**
9	55.2	**2943.26**	**4824.37**
10	**Halfspace**	**2943.26**	**4824.37**

Depth to Half Space (ft)	**55.2**
Number of Layers	10
Seismic Site Classification (Vs30)	**N/A**

MASW Results – Summer Shade (MASW-05)

1-D Vs Profile

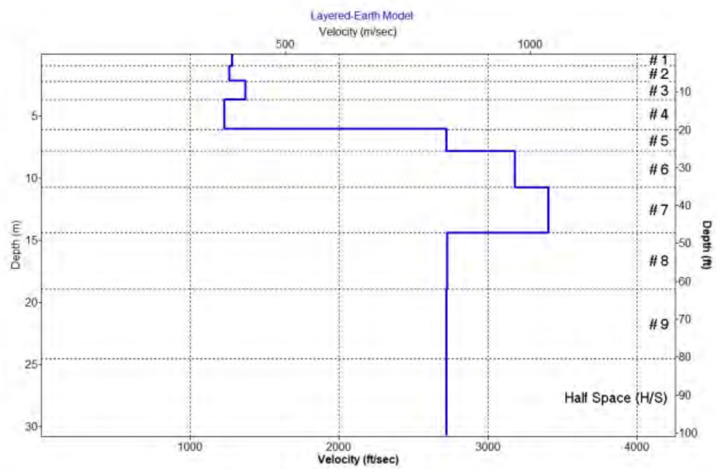


Table of Vs Values

Layer No.	Depth (ft)	Final Vs (ft/s)	Final Vp (ft/s)
1	3.1	**1279.92**	**2617.50**
2	7.0	**1260.93**	**2578.69**
3	11.9	**1368.74**	**2799.17**
4	19.8	**1227.09**	**2509.47**
5	25.7	**2722.32**	**4392.57**
6	35.2	**3177.81**	**5127.52**
7	47.2	**3406.63**	**5496.73**
8	62.1	**2724.88**	**4396.71**
9	80.7	**2721.46**	**4391.18**
10	**Halfspace**	**2719.05**	**4387.30**

Depth to Half Space (ft)	**80.7**
Number of Layers	10
Seismic Site Classification (Vs30)	**N/A**

MASW Results – Summer Shade (MASW-06)

1-D Vs Profile

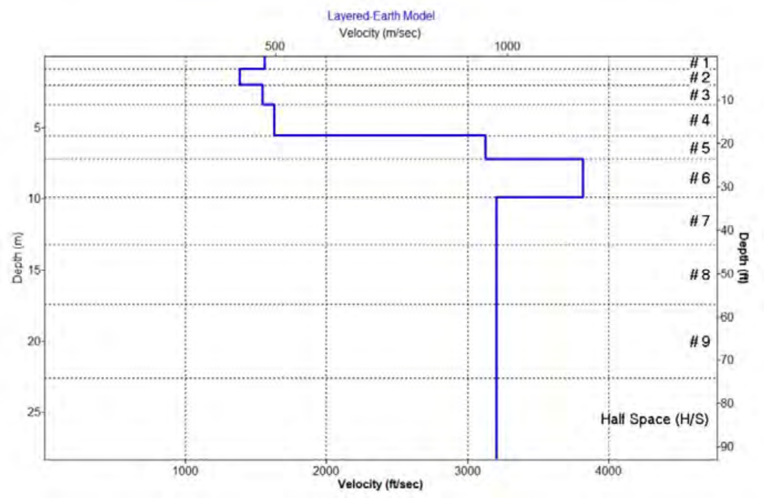


Table of Vs Values

Layer No.	Depth (ft)	Final Vs (ft/s)	Final Vp (ft/s)
1	2.9	**1563.21**	**3060.88**
2	6.5	**1383.64**	**2709.26**
3	11.0	**1547.94**	**3030.97**
4	18.2	**1629.81**	**3191.28**
5	23.7	**3128.08**	**4960.29**
6	32.5	**3817.16**	**6052.97**
7	43.5	**3205.51**	**5083.08**
8	57.2	**3205.43**	**5082.94**
9	74.4	**3205.30**	**5082.74**
10	**Halfspace**	**3205.22**	**5082.62**

Depth to Half Space (ft)	**74.4**
Number of Layers	10
Seismic Site Classification (Vs30)	**N/A**

MASW Results – Summer Shade (MASW-07)

1-D Vs Profile

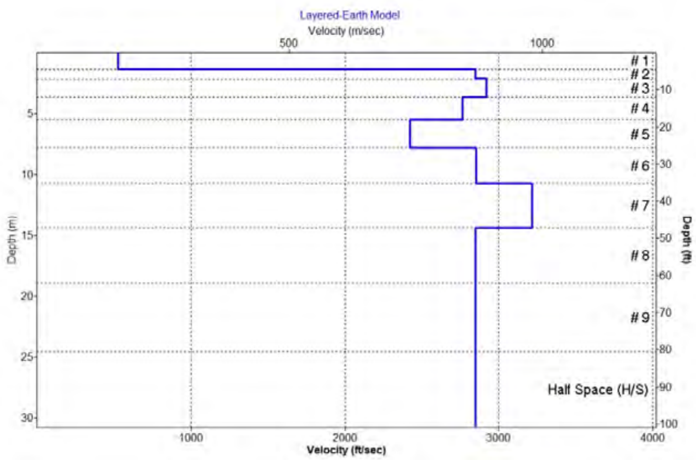


Table of Vs Values

Layer No.	Depth (ft)	Final Vs (ft/s)	Final Vp (ft/s)
1	4.4	**525.96**	**1285.23**
2	7.0	**2846.02**	**4782.07**
3	11.9	**2920.08**	**4906.51**
4	18.0	**2762.81**	**4642.25**
5	25.7	**2423.38**	**4071.92**
6	35.2	**2852.15**	**4792.36**
7	47.2	**3217.64**	**5406.49**
8	62.1	**2846.02**	**4782.07**
9	80.7	**2846.02**	**4782.07**
10	**Halfspace**	**2846.02**	**4782.07**

Depth to Half Space (ft)	**80.7**
Number of Layers	10
Seismic Site Classification (Vs30)	**N/A**

MASW Results – Summer Shade (MASW-08)

1-D Vs Profile

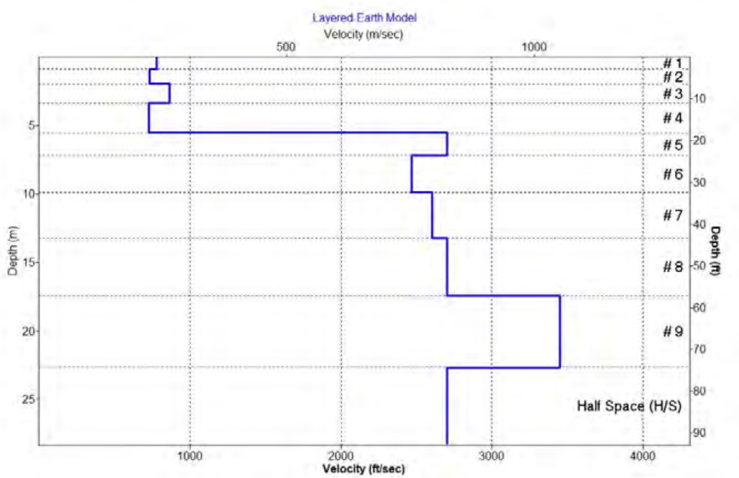


Table of Vs Values

Layer No.	Depth (ft)	Final Vs (ft/s)	Final Vp (ft/s)
1	2.9	**778.32**	**1726.63**
2	6.5	**732.27**	**1624.47**
3	11.0	**863.46**	**1915.51**
4	18.2	**730.48**	**1620.50**
5	23.7	**2704.44**	**4912.11**
6	32.5	**2468.46**	**4483.48**
7	43.5	**2605.40**	**4732.22**
8	57.2	**2704.44**	**4912.11**
9	74.4	**3447.99**	**6262.63**
10	**Halfspace**	**2704.44**	**4912.11**

Depth to Half Space (ft)	**74.4**
Number of Layers	10
Seismic Site Classification (Vs30)	**N/A**

Attachment D-2

Multichannel Analysis of Surface Waves (MASW) Profiles – Phase II

MASW Results – Summer Shade (MASW-09)

1-D Vs Profile

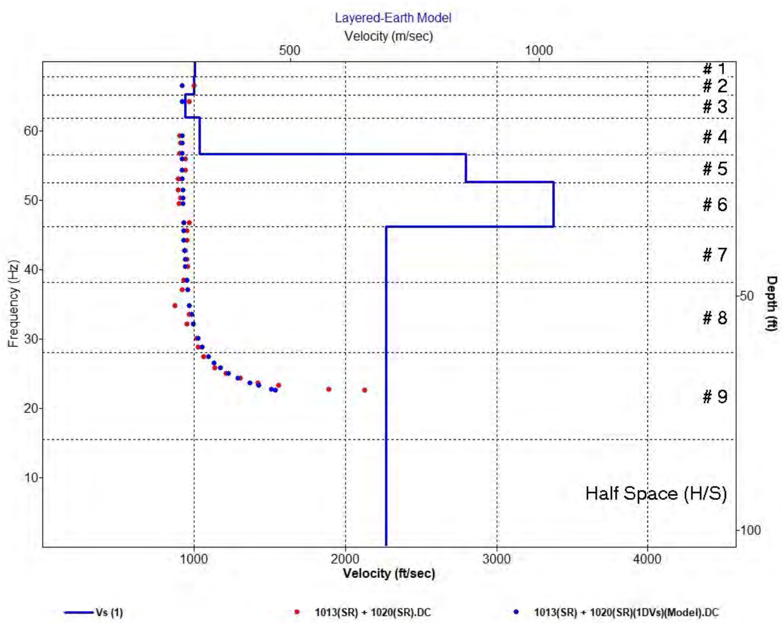


Table of Vs Values

Layer No.	Depth (ft)	Final Vs (ft/s)	Final Vp (ft/s)
1	3.1	**1004.88**	**2111.15**
2	7.0	**999.51**	**2099.86**
3	11.9	**942.41**	**1979.91**
4	19.8	**1038.91**	**2182.64**
5	25.7	**2798.63**	**4999.49**
6	35.2	**3376.65**	**6032.08**
7	47.2	**2269.02**	**4053.40**
8	62.1	**2269.02**	**4053.40**
9	80.7	**2269.02**	**4053.40**
10	**Halfspace**	**2269.02**	**4053.40**

Depth to Half Space (ft)	**80.7**
Number of Layers	10
Seismic Site Classification (Vs30)	**N/A**

MASW Results – Summer Shade (MASW-10)

1-D Vs Profile

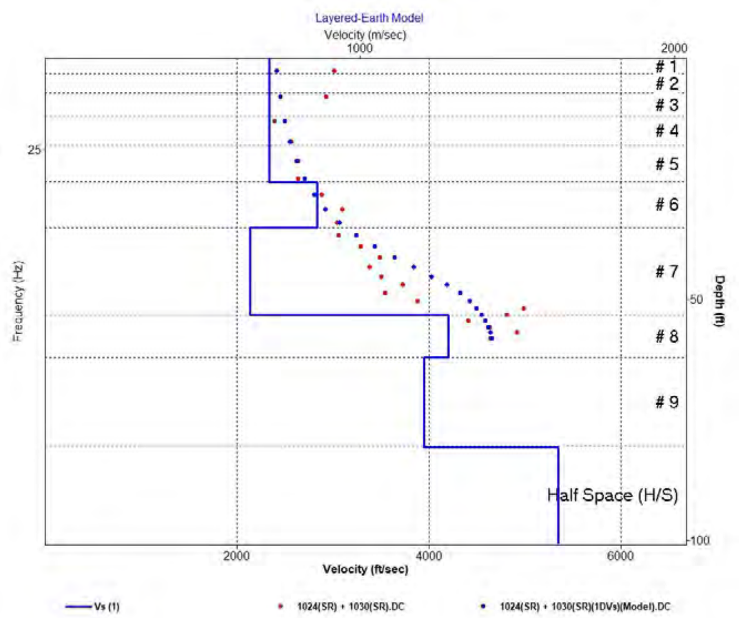


Table of Vs Values

Layer No.	Depth (ft)	Final Vs (ft/s)	Final Vp (ft/s)
1	3.1	**2334.33**	**15054.53**
2	7.0	**2334.33**	**15054.53**
3	11.9	**2334.33**	**15054.53**
4	18.0	**2334.33**	**15054.53**
5	25.7	**2334.33**	**15054.53**
6	35.2	**2838.45**	**18305.70**
7	53.3	**2134.58**	**13766.33**
8	62.1	**4202.73**	**16846.39**
9	80.7	**3949.41**	**15890.99**
10	**Halfspace**	**5346.65**	**21431.70**

Depth to Half Space (ft)	80.7
Number of Layers	10
Seismic Site Classification (Vs30)	**N/A**

MASW Results – Summer Shade (MASW-11)

1-D Vs Profile

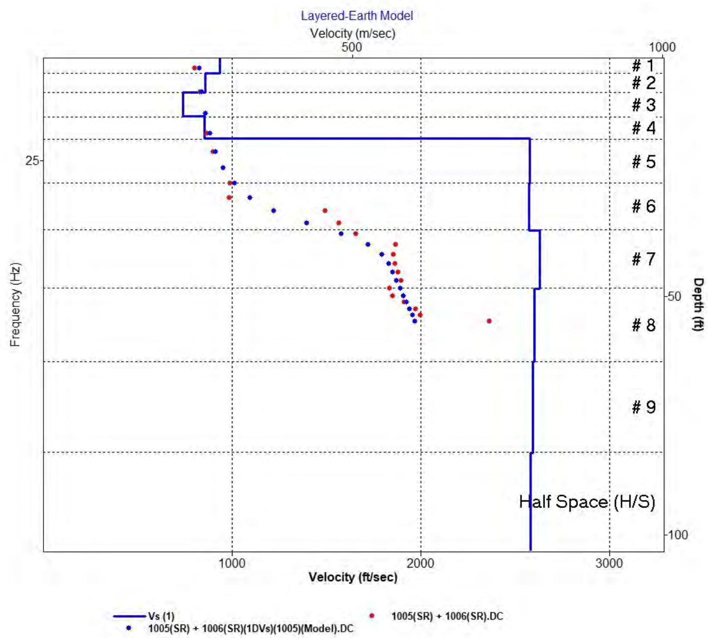


Table of Vs Values

Layer No.	Depth (ft)	Final Vs (ft/s)	Final Vp (ft/s)
1	3.2	**937.09**	**2035.96**
2	7.2	**857.75**	**1863.60**
3	12.2	**740.50**	**1608.86**
4	16.9	**854.99**	**1857.60**
5	26.3	**2578.66**	**4531.56**
6	36.1	**2574.33**	**4523.95**
7	48.4	**2631.74**	**4624.85**
8	63.7	**2604.44**	**4576.86**
9	82.8	**2594.36**	**4559.16**
10	**Halfspace**	**2580.54**	**4534.87**

Depth to Half Space (ft)	82.8
Number of Layers	10
Seismic Site Classification (Vs30)	**N/A**

Attachment E

Geological Mapping

ANS GEO

Client:

Candela RENEWABLES

GEOLOGICAL MAPPING

CANDELA RENEWABLES
SUMMER SHADE SOLAR PROJECT
METCALFE & MONROE COUNTIES, KENTUCKY

Legend

- Renfro and Muldraugh Members of Borden Formation and Fort Payne Formation
- Salem, Warsaw, and Harrodsburg Limestones
- Ste. Genevieve and St. Louis Limestones
- Project Boundaries

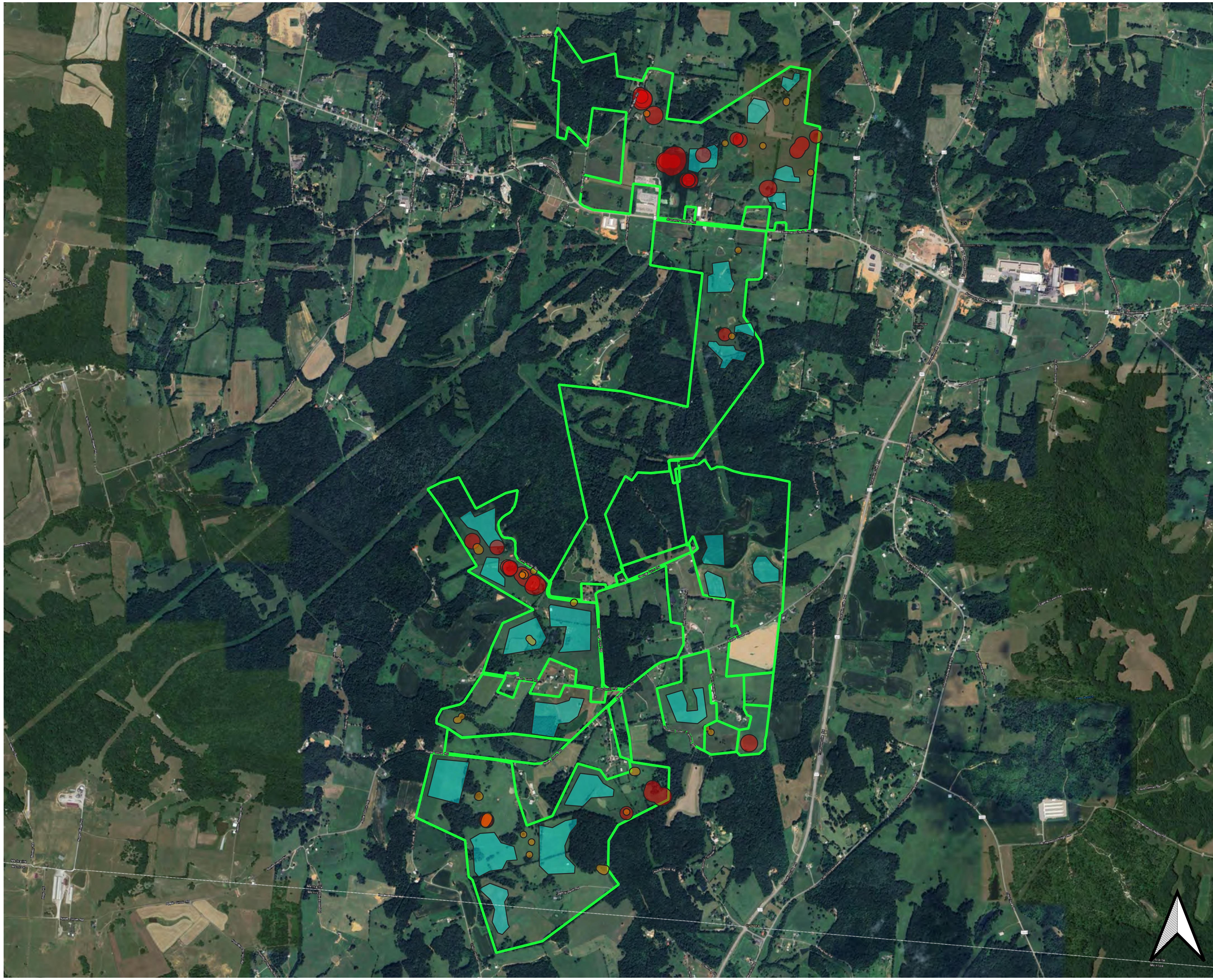
0 2,500 5,000 ft

Absolute Scale: 1 inch = 2,500 feet
Scale at 11" x 17" AS SHOWN

Prepared by: Zachary Agnew
Date: October 14, 2024
Drawing Number: Geological-Mapping-Rev.1

Attachment F

Karst Risk Map



ANS GEO

Client:

Candela RENEWABLES

KARST RISK MAP

CANDELA RENEWABLES SUMMER SHADE SOLAR PROJECT - PHASE I & II METCALFE & MONROE COUNTIES, KENTUCKY

Legend

- 75-Foot Recommended Buffer Zone (Moderate Risk)
- 150-foot Recommended Buffer Zone (High Risk)
- Constraint Area
- Project Boundaries

0 2,500 5,000 ft

Absolute Scale: 1 inch = 2,500 feet
Scale at 11" x 17" AS SHOWN

Prepared by: Zachary Agnew
Date: October 14, 2024
Drawing Number: KRM-Rev.3

Attachment G

Karst Management & Mitigation Plan

KARST MANAGEMENT AND MITIGATION PLAN

Candela Renewables

Summer Shade Solar Project

Metcalfe and Monroe Counties, Kentucky

November 22, 2024

Prepared by: Vatsal A. Shah, PE, Ph.D, D.GE
Vatsal.Shah@ansgeo.com

Table of Contents

1. Introduction 1
2. Background 1
3. Potential Karst Risks Associated with Photovoltaic Developments 2
4. Avoidance, Minimization, Management, and Mitigation Measures 3
5. Best Management Practices and Construction Housekeeping 4
6. Maintaining Buffer Areas and Other Construction Considerations 4
7. Equipment Storage, Fueling, and Maintenance Considerations 6
8. Construction-Phase Karst Inspections 6
9. Mitigation Measurements for Karst Encountered During Construction 7
10. Long-term Monitoring and Maintenance 8
11. References 8

Attachments:
Attachment 1 – Sinkhole Repair with Pervious Cover Detail
Attachment 2 – USDA NRCS Sinkhole Repair with Soil Cover Detail

1. Introduction

ANS Geo has provided this Karst Management and Mitigation Plan to address potential impacts and hazards related to local karst formation recently identified in the field during a karst feature exploration and a geophysical investigation program (Electrical Resistivity Imaging and Multi-channel Analysis of Surface Waves surveys) performed prior to the development of the Summer Shade Solar Project. The Plan outlines monitoring activities and corrective measures that Candela Renewables may implement if project development proceeds and karst features are encountered during the various stages of construction and long-term operation and maintenance of the facility.

2. Background

Karst terrain is formed by the solution of carbonate rock (e.g., limestone, dolostone, and marble) by infiltrating surface water and groundwater along fractures, joints, and bedding planes. Karst terrain is characterized by features such as cavern openings, sinkholes, closed depressions, and gaining and losing streams. When rock dissolves, conduits and caverns develop underground. These types of formations are referred to as karst topography. The land over these caverns may stay intact until there is not enough support for the land above the open space. Eventually, a collapse of the land can occur, creating a sinkhole, which can vary greatly in size and shape. Human activities and development can also expedite cavity formation in more susceptible materials and trigger a collapse.

Sinkholes are naturally occurring phenomena in areas underlain by carbonate bedrock. Most sinkholes are triggered by external factors such as significant or prolonged rainfall, periods of drought, heavy groundwater pumping, or stormwater management practices; however, activity at remnant or dormant sinkholes may be triggered by uncontrolled construction practices. When sinkholes (and associated ground movement) occur on photovoltaic (PV) developments, they generally express themselves at the ground surface in two ways: the first, as a sudden collapse caused by exceeding the capacity of bridging support that exists above an air-filled void; and the second, a longer-duration and gradual ground surface movement as surface and subsurface soils are washed into cavities and karst features by groundwater movement.

Where present, karst terrain can create engineering and environmental issues to PV developments due to subsidence, impacts to groundwater quality, operational losses, and stormwater flooding and control issues. A typical PV development consists of photovoltaic solar panels ground-mounted on a low-profile racking system that will be supported by small I-beam posts driven into the ground. In addition, supporting and accessory structures may include:

- Inverters (with transformers) placed on concrete pads throughout the Facility to convert DC electricity to AC electricity;
- Medium voltage cable collection system that will extend underground to aggregate the AC output from the inverters;
- A step-up transformer at the point of interconnect;
- Project infrastructure, such as stone access roads (approximately 15 to 20 feet wide), grassed

access corridors, and security fencing around Facility equipment; and

- Temporary laydown areas for equipment and material staging during construction.

Most karst terrain consists of a complex system impacted by groundwater flow direction, infiltration and precipitation rates, changes in landform and topography, as well as man-made development. A change in any of these conditions, such as re-grading and re-direction of quantity, drainage, and infiltration of stormwater, can result in a change in the risk profile for areas across the site. Off-site impacts, such as groundwater pumping or increased infiltration caused by storm events can also alter the groundwater flow direction, which can modify subsurface conditions.

In absence of the PV development and if agricultural practices were continued without proper caution, the risk of sinkhole and hydrologic-related damage to the Project Site would continue to exist. Therefore, the intent of karst management and mitigation is generally directed toward avoidance of karst areas during initial planning and design by use of adequate buffer distances and focusing design toward non-karst areas. If karst features are unavoidable due to land boundaries, available project area, or other environmental or engineering constraint, then minimization and mitigation of karst-related risks would be implemented. This could include the use of survey markers or other monitoring and measuring devices to evaluate the potential impact of ground subsidence, such as that described in Section 10.

Risk associated with these factors can be minimized with proper planning and design. It should be noted that the majority of PV development tends to occur in agricultural fields and across large, undeveloped land areas. This is the case at the Summer Shade site, where areas of depression were observed including small, localized depressions as well as large and wide, bowl-like depressions. “Open throat” features, sinkholes, and filled-in areas likely associated with former karst feature surface expressions were also observed.

3. Potential Karst Risks Associated with Photovoltaic Developments

Ground-mounted PV developments may span multiple geologic formations due to the nature of their size. As karst terrain has been identified, changes in rock formations (and changes within a rock formation) have the ability to impact both the short-term and long-term performance through:

1. Differential settlement across panels, causing damage to modules and hardware;
2. Additional loads and stresses on structural elements such as purlins, racking, and posts;
3. Change in drainage patterns across the site, on-site and off-site hydrology, and run-off;
4. Development of topographic depressions that may hold water;
5. On-going maintenance such as re-setting modules and posts and purlins, shimming or underpinning foundations, and compensation or jet grouting to stabilize or arrest the active development of high-risk caverns; and
6. Damage to a portion of or all site facilities and limiting ability to generate power.

In general, a PV development should maintain the general topography and site cover to the extent possible. Construction of a PV development typically consists of the project area being cleared and/or lightly graded for the Project, with the exception of culturally and biologically sensitive areas.

Following clearing and light grading, the solar arrays for the Summer Shade project are expected to be supported by drilled steel piles, which are expected to be embedded into the ground with an embedment of up to 10-feet below grade. In areas of existing and mapped sinkholes, where the site grade will be lower than the surrounding site grade, fill placement may be required prior to the installation of piles.

4. Avoidance, Minimization, Management, and Mitigation Measures

Avoidance of karst features is commonly the primary recommended mitigation measure during planning, design, and construction of a proposed PV project. During the various stages of project development, review of publicly-available data along with site-specific geotechnical investigation results helps determine the presence or absence of sinkholes for the Project. Once the potential for karst has been determined, development and site layout activities can factor these features into planning, construction, and operation.

In the event development proceeds at the project site, karst avoidance areas have been provided to maintain a 75-foot buffer from the edge of closed depressions or singular small open-throat features and 150-foot buffers from the edge of open subsidence features interpreted to have underlying air- or soil-filled cavities based on geophysical survey results, groups of karst features, or other signs of significant karst. All karst-related features identified at the time of this report are provided in Location Plans in Attachment B and in the Karst Risk Map within Attachment F. In cases where the design of the facility has already been completed, avoidance measures may not be possible; therefore minimization, management, and mitigation measures will likely be necessary to maintain the project development.

For small, localized depressions, it is expected that remediation will require select excavation to identify and confirm the location of the sinkhole throat, placing geotextile separation and filter fabric across the entire bottom and sidewalls of the excavation, backfilling any identified cavern or open cavity with large-diameter stone or fill, then re-placement with a soil cap compacted to match native soil. A value of approximately 85% of the fill material's Standard Proctor maximum dry density (ASTM D698) is considered a good approximation of native soil conditions. In areas where small, localized depressions are located within the proposed inverter footprint, this compaction should be increased to a minimum of 95% Standard Proctor maximum dry density, with backfill material properly moisture conditioned within +/- 2% of optimum moisture content and placed in controlled lifts.

For large, bowl-like depressions, it is expected that the method of restoration and repair will be similar to the steps for small sinkholes, along with mass filling to restore the site grade. It will be important that the material within these large basins is not simply placed in an uncontrolled manner, but placed in controlled lifts, moisture conditioned within +/- 2% of optimum moisture content, and compacted to a minimum of 90% of the fill material's Standard Proctor maximum dry density determined in accordance with ASTM D698. This will allow for PV array piles and ancillary structures, such as inverter pads, in these areas to have the intended structural capacity to support design loads. In areas where sinkholes are located within the proposed inverter footprint, this compaction should be increased to a minimum of 95% Standard Proctor maximum dry density, with backfill material properly moisture conditioned within +/- 2% of optimum moisture content and placed in controlled lifts.

5. Best Management Practices and Construction Housekeeping

Naturally-occurring karst terrain provides a subsurface drainage system for overburden soil overlying carbonate bedrock. However, concentrations of post-development stormwater runoff from construction activities can destabilize the natural karst hydrogeologic system and lead to potential sinkhole development, sinkhole flooding, or groundwater impacts if unmanaged.

The principal approach to avoid aggravating dormant caverns, possible areas of subsidence, and karst activity is to maintain rates of recharge and discharge in the subsurface at the desired natural levels. In this context, desired natural levels refer to the pre-development recharge and discharge rates. Therefore, during construction and in areas where mapped and verified karst terrain exists, in addition to the standard erosion control Best Management Practices as defined in the project Stormwater Pollution Prevention Plan (SWPPP), double layers of silt fencing should be implemented, as well as hay bales or coir logs along the edges of active and unremediated sinkhole areas to prevent outward migration of soil and reduce runoff velocity and water quantity into these sinkhole areas. This will help control the flow of water into underlying karst areas, which meets the intent of maintaining rates of subsurface recharge and discharge to pre-development conditions to minimize aggravating the karst condition. Stormwater control measures in areas of known and verified karst terrain should also be enhanced to include detention and diversion to prevent construction-influenced stormwater from flowing to the karst feature drainage zone. NO CONSTRUCTION RUN-OFF SHOULD BE DIRECTED TO IDENTIFIED SINKHOLE AREAS.

6. Maintaining Buffer Areas and Other Construction Considerations

It is understood that buffers around karst features generally have the intention of maintaining vegetation, structural integrity, and/or drainage of the existing karst feature within the buffer area. The use of buffers also helps minimize exposure to sinkhole subsidence and sinkhole flooding, if project features or components are proposed near or adjacent to these buffer areas. Buffers related to certain activities within karst areas are recommended as follows:

Earthmoving:

During conventional installation of posts, slabs, and other accessory features, the EPC or its subcontractor will conduct earthmoving activities in a manner that will minimize altering the existing grade and hydrology of existing surficial karst features. Where a known and delineated karst feature exists, earthmoving, including cutting and permanent filling of more than one foot (vertically) within 75 feet of the feature, should be avoided to the extent possible or minimized. Should this amount of permanent cut or fill be exceeded, stormwater design should be evaluated to confirm that no ponding occurs or change in run-off patterns is created.

During routine trenching and utility/cabling installation adjacent to karst features, spoils should be placed on the upgradient side of the excavation such that, if any erosion was to occur, the stockpiled soil would return into the excavation and not to the downgradient toward the karst features.

Removal of Rock:

To the extent possible, removal of rock should be minimized, and only be conducted for the purpose of breaking of rock ledges to expose sinkhole throats. The Natural Resources Conservation Service (NRCS) defines shallow depth to bedrock as being within 5 feet of the ground surface. Rock may be removed using one of the following techniques, typically in the order listed below:

1. Conventional excavation with a backhoe;
2. Hammering with a pointed backhoe attachment or a pneumatic rock hammer, followed by backhoe excavation;
3. Ripping with a bulldozer; and
4. Blasting followed by backhoe excavation, only if/when approved by the Geotechnical Engineer of Record and/or Owner.

The rock removal technique should depend on rock properties, such as relative hardness, fracture susceptibility, expected volume, and location. Areas of shallow depth to bedrock crossed by the Project should be determined by review and analysis of published soil survey data from the NRCS Web Soil Survey, published geologic mapping, and site-specific investigations conducted across the project area.

Should blasting be required, a Blasting Plan should be prepared with the intent to identify blasting operations, including safety, use, storage, and transportation of explosives that are consistent with minimum safety requirements, as defined by applicable federal, state, and local regulations (e.g., Title 27 Code of Federal Regulations[CFR] 181 - Commerce in Explosives; Title 49 CFR 177 - Carriage by Public Highway; Title 29 CFR 1926.900 et seq. Subpart U - Safety and Health Regulations for Construction - Blasting and Use of Explosives; Title 29 CFR 1910.109 - Explosives and Blasting Agents; 29 CFR 1926.900 - General Provisions and Standards Nos. 901, 902, and 904-912).

Notwithstanding the above, blasting in proximity to known and verified karst areas should be conducted in a manner so as not to compromise the structural integrity of pre-existing karst features or to alter subsurface hydrology through karst areas. If it is deemed that rock removal using blasting or hammering techniques is required in a karst-prone area, the area should be carefully inspected by a geotechnical representative from ANS Geo or other experienced geotechnical professional to evaluate if any voids, openings, or other identifying features typical of dissolution are present. If the proposed rock removal is expected to intersect a karst feature such as a sinkhole throat/void, cavern, or conduit, work in the area will be stopped until a location-specific assessment can be made by ANS Geo or a qualified geotechnical engineer familiar with the project and with experience in karst terrain mitigation.

Following inspection of the area and guidance, as warranted, by a geotechnical representative from ANS Geo or other experienced geotechnical professional to allow blasting activities near any identified karst features, the use of all explosives should be limited to low-force charges designed to transfer a maximum charge of 0.5 inches per second ground acceleration and minimize propagation outside of the blast area. If the percussive drill used to install blast holes encounters a single subsurface void greater than 6 inches or a group of voids greater than a combined 12 inches, explosives should not be used, and a subsurface exploration to determine if the voids have connectivity with a deeper structure should be conducted. It is anticipated that such an investigation would consist of additional percussive probes, electrical resistivity surveys, or use of other techniques capable of resolving open voids in the underlying bedrock. All open holes created by investigative activities should be grouted shut after completion of the investigation to prevent the migration of surface water into deeper and previously unexposed karst.

Construction Near Wells, Springs, and Karst Surface Expressions:

Buffers up to 75 feet around documented karst surface expressions and wells and springs recharging karst hydrology are recommended to be maintained between all work areas and the karst-related features of moderate risk as provided in the Karst Risk Map within Attachment F. For undocumented features, or features found during construction, a minimum buffer of 150 feet should be provided until the feature is reviewed and categorized by the Geotechnical Engineer of Record. Surface water control measures including, but not limited to diversion, detention, or collection and transportation should be implemented to minimize construction-influenced surface water from entering into the karst-related features. At no time should the karst features be used for the disposal or extraction of construction water.

7. Equipment Storage, Fueling, and Maintenance Considerations

During construction activities, in addition to following the project-specific SWPPP, the EPC and its subcontractor should implement best management practices to minimize the potential impact of spills related to equipment storage, fueling, and maintenance within proximity to karst areas and sensitive resources.

In general, refueling of vehicles should not occur within 100 feet of any karst feature open to the surface. Additionally, equipment refueling should not be performed within flagged or marked buffer areas of streambeds, sinkholes, fissures, or areas draining into these or other karst features, except by hand-carried cans (five-gallon maximum capacity) and when deemed necessary. For equipment servicing and maintenance activities, areas should be sited outside of flagged or marked buffer areas of streambeds, sinkholes, fissures, or areas draining into these or other karst features. The EPC should instruct its subcontractor to avoid runoff created by equipment washing to directly enter any karst feature by locating these activities outside the buffer areas listed in Section 6.

To the extent practical, no equipment or material should be stored within proximity of exposed karst features. Where storage is necessary near known karst areas, any construction equipment vehicles, materials, hazardous materials, chemicals, fuels, lubricating oils, and petroleum products should not be parked, stored, or serviced within 300 feet of any karst feature. Should equipment require storage within this buffer area, the equipment should be checked daily for leaks by a construction inspector familiar with operation and maintenance of the specific equipment. Any damaged, defective, or leaky equipment should be removed and replaced.

8. Construction-Phase Karst Inspections

Prior to and throughout construction, on sites where karst has been positively identified, the EPC or its subcontractor should conduct awareness training for karst-like features such as portals, voids, or sinkholes. The training should include the Contractor's field supervisory personnel and other supervisory personnel. These personnel should be trained on potential unanticipated karst features (i.e., features not identified through previous geophysical mapping and historic records) that could be discovered during trenching operations and other construction activities. The training should also provide the appropriate protocol for work stoppage if a karst feature is discovered in the immediate area and a communication plan to alert the appropriate Candela Renewables and EPC supervisors of such discovery to allow the feature and potential impacts to be evaluated by a geotechnical representative from ANS Geo or other experienced geotechnical professional.

9. Mitigation Measurements for Karst Encountered During Construction

If an unanticipated karst feature is discovered during trenching or other construction activities, work in the immediate area should be immediately stopped and Candela Renewables and the EPC's supervisors should be notified. Additional erosion and sedimentation controls should be installed as necessary to minimize the potential for surface water runoff intrusion into the karst feature. A geotechnical representative from ANS Geo or other technical professional familiar with the project and with experience in karst terrain should be contacted and directed to the feature to conduct a detailed evaluation. If necessary, the geotechnical representative will develop specific design and mitigation measures depending on the site conditions and nature of the identified karst feature.

If new sinkhole throats develop within the construction area while work is commencing or during construction, work in the area should be halted, and the sinkhole area should be isolated and cordoned off to an area extending 150 feet radially from the feature. The sinkhole should be inspected by a geotechnical representative from ANS Geo or other experienced geotechnical professional, and remedial measures such as filling of the sinkhole using the inverted filter approach or field-adjustment of the site developments may be implemented. The inverted filter approach is often used for sinkhole repair, especially when the sinkhole is not located near structures. The sinkhole area is excavated to expose either bedrock or the throat of the sinkhole, and a course of rock large enough to bridge the throat of the sinkhole is placed at the bottom of the excavation. Subsequently, once the sinkhole throat has been "choked", a geotextile separation fabric is placed to line the bottom and sidewalls of the excavation, followed by placement of courses of progressively finer rock and gravel that are compacted above the base course. A geotextile fabric may be placed above the finest gravel course to prevent excessive loss of the uppermost course, which may consist of sand and/or soil. The inverted filter method provides filtration treatment of stormwater and allows controlled stormwater infiltration and groundwater recharge.

If an existing subsurface void is intersected within the work area, work should similarly be halted and cordoned off for further evaluation by a geotechnical representative from ANS Geo or other experienced geotechnical professional. As indicated earlier, the principal approach to maintain rates of recharge and discharge at pre-development conditions may include securing a filter fabric over the void in addition to creating an inverted filter using crushed stone brought up to approximately one foot below grade and wrapped with the filter fabric, then backfilled and compacted with native soil.

Commonly-accepted methods to mitigate sinkhole collapses and similar subsurface voids that have been developed by national and state agencies such as the United States Geologic Survey (USGS), US Department of Agriculture Natural Resources Conservation Service (USDA NRCS), and Pennsylvania Department of Environmental Protection (PADEP) are provided as Attachments 1 and 2 with this Plan. These typical details may be implemented depending on the karst feature encountered. The EPC or civil subcontractor should contact the Geotechnical Engineer of Record to define which remediation measure should be used for each instance prior to use. The mitigation methods provided with this Plan would provide enhanced stability to the void and increase the long-term stability. Final grading contours and any necessary permanent erosion and sediment controls should be designed to prevent runoff from accumulating in the area of the void.

10. Long-term Monitoring and Maintenance

In addition to an offset buffer from potential karst risk zones, when developments are built within areas of known or confirmed karst, it is recommended that a monitoring program is implemented to identify, understand, and mitigate/remediate during long-term operation of the development. The intent of the monitoring program is to evaluate larger-scale, ground-level movement attributable to karst, such as the gradual "bowl-like" movement that gradually occurs as a sinkhole feature develops over time. The monitoring program is intended to determine topographic variations over time, which would result in bending, tilting, and added stress to racking, modules, and structural components.

It is recommended that a monitoring program is implemented to identify, understand, and mitigate/remediate during long-term operation of the development. Interferometric Synthetic Aperture Radar (InSAR) is a recommended monitoring technique that can be utilized to evaluate potential land subsidence over time. InSAR is a remote sensing technique used to map ground surface movement over time. The technique involves using two synthetic aperture radar (SAR) images of the same area taken from satellite or airborne platforms at different times. Advantages of the technique are that high precision displacements on the order as small as a few millimeters can be detected. Additionally, as this is a remote sensing technique, long term monitoring can be performed from a remote location.

ANS Geo recommends a program that monitors SAR data sets every six (6) months through the project's lifespan. This monitoring will show if, where, and to what extent subsidence has and may continue to occur. If, through monitoring, subsidence is observed within the general vicinity of project structures or access roads, additional investigations (geophysics and geotechnical) should be conducted at those specific locations to determine the risk of the subsidence and mitigation efforts that may be needed (i.e. compaction or chemical grouting, capping and filling with compacted soil or rock) to reduce any risk of structure or array tracker failure. In addition, re-setting of panels, racking, or other structural elements may become necessary if movement is shown from monitoring to prevent flexure of sensitive PV modules, cracking of glass, or added stress and/or shearing of connection pins, bolts, and other hardware.

11. References

1. Denton, R. K. Jr. (2013). Towards a Karst Assessment Standard Practice, Proceedings of the 13th Conference on Engineering and the Environment in Karst, National Cave and Karst Research Institute, Carlsbad, NM.

2. Devilbiss, T.S. (1995). A local government approach to mitigating impacts of karst. Karst GeoHazards, Berry Beck (ed.). Balkema, Rotterdam: 499-504.

3. Ford, D. C., and P. W. Williams (1989). Karst Geomorphology and Hydrology, University Press, Cambridge, Great Britain.

4. Kastning, E.H. & Kastning, K.M. (1989). Sinkhole Management. Proceedings of the 1989 National Cave Management Symposium. Jorden, J. & Obele, R. (eds.). Texas Cave Management Association. New Braunfels, Texas: 54-68.

5. Kastning, E.H. & Kastning, K.M. (1997). Buffer Zones in Karst Terranes. Proceedings: Karst Water Environment Symposium, T. Younos, T Burbey, E. Kastning, & J. Poff (eds.). Virginia Water Resources Research Center, Virginia Tech: Pg. 80-87.

6. Kochanov, W.E. (1995). Storm-water management and sinkhole occurrence in the Palmyra area, Lebanon County, Pennsylvania. Karst Geohazards. Berry Beck (ed.). Balkema, Rotterdam: Pg. 285-290.

7. PADCNR (1999). Kochanov, W.E. Bureau of Topographic and Geologic Survey, Sinkholes in Pennsylvania (Third Printing, Revised 2005). http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_014591.pdf Accessed on June 2, 2015.

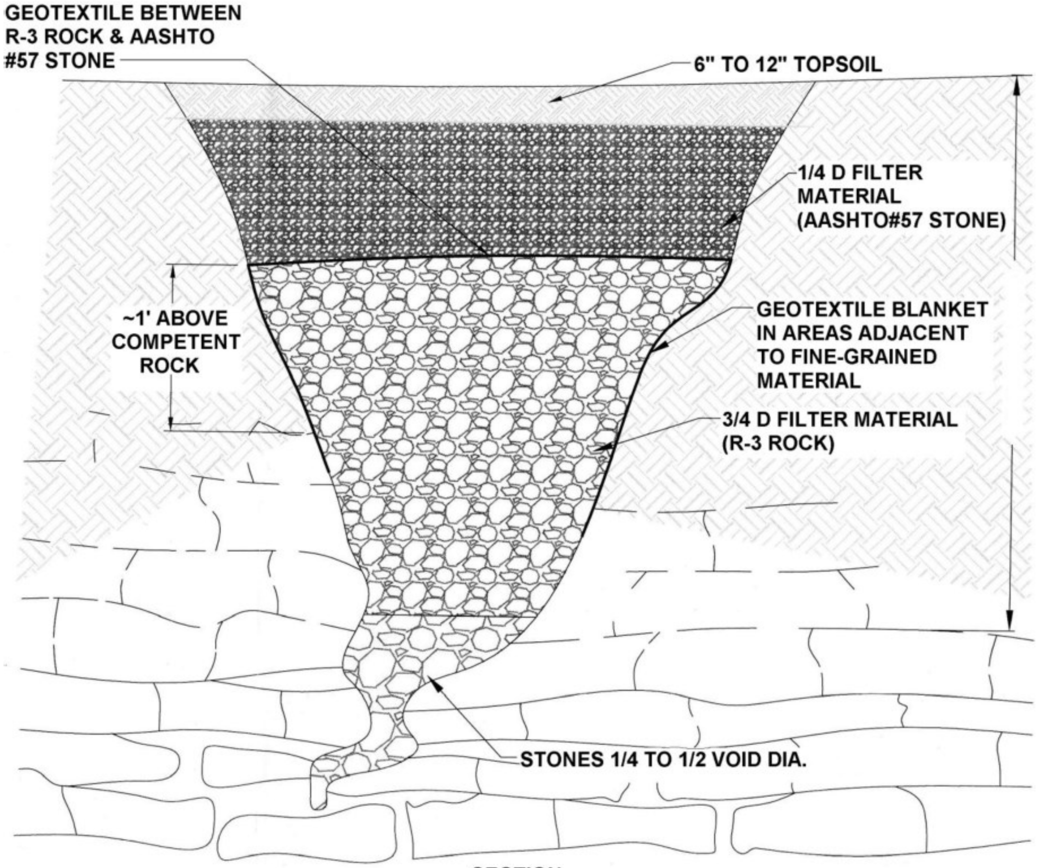
8. Pennsylvania Department of Environmental Protection (March 2012). Erosion and Sediment Pollution Control Program Manual, Technical Guidance Number 363-2134-008. Accessed June 1, 2015.

9. USEPA (1989). Groundwater Monitoring in Karst Terranes, Recommended Protocols & Implicit Assumptions, EPA 600/X-89/050, February.

10. U.S. Geologic Survey (2005). Mineral Resources Data System. Last Revised January 2012. Available at: http://mrdata.usgs.gov/mrds/.

Attachment 1

Sinkhole Repair with Pervious Cover Detail



Source: Adapted from USDA NRCS

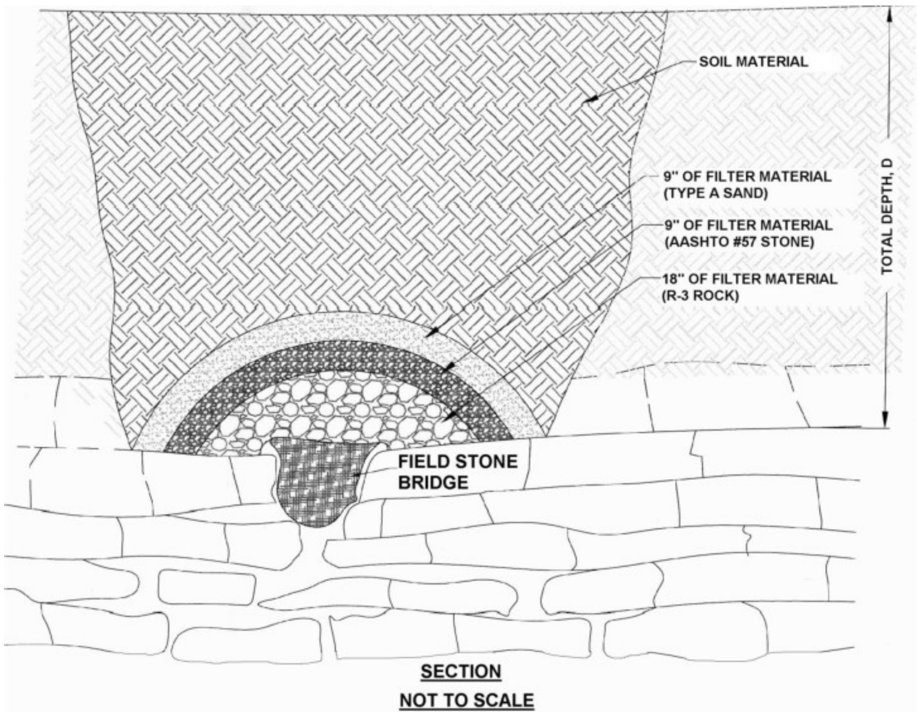
Notes

1. Loose material shall be excavated from the sinkhole, and expose solution void(s) if possible. Enlarge sinkhole if necessary to allow for installation of filter materials. OSHA regulations must be followed at all times during excavation.

2. Stones used for the “bridge” and filters shall have a moderately hard rock strength and be resistant to abrasion and degradation. Shale and similar soft and/or non-durable rock are not acceptable.

Attachment 2

USDA NRCS Sinkhole Repair with Soil Cover Detail



Source: Adapted from USDA NRCS

Notes:

1. Loose material shall be excavated from the sinkhole, and solution void(s) shall be exposed if possible. Enlarge sinkhole if necessary to allow for installation of filter materials. OSHA regulations must be followed at all times during excavation.

2. Select field stone(s) about 1.5 times larger than solution void(s) to form the “bridge.” Place rock(s) such that no large openings exist along the sides. Stones used for the “bridge” and filters shall have a moderately hard rock strength and be resistant to abrasion and degradation. Shale and similar soft and/or non-durable rock are not acceptable.

3. Minimum thickness of R-3 rock is 18”. AASHTO #57 stone thickness shall be a minimum of 9” thick. Minimum thickness of type A sand shall be 9”. NOTE: A non-woven geotextile with a burst strength between 100 and 200 psi may be substituted for the AASHTO#57 stone and type A sand.

4. Soil shall be mineral soil with at least 12% fines and overfilled by 5% to allow for settlement. Suitable soil from the excavation may be used. Any available topsoil shall be placed on the top surface.